Why Paris Needs Hector and Lancelot Needs Mordred: Using Traditional Narrative Roles and Functions for Dramatic Compression in Interactive Narrative

Janet H. Murray

Graduate Program in Digital Media, School of Literature, Communication and Culture, Georgia Tech, TSRB 320A, Atlanta GA 30332 USA
jmurray@gatech.edu

Abstract. This paper proposes that we think of traditional story patterns as an available abstraction technology, containing strategies of parameterization and encapsulation that could be useful for creating digital narratives with meaningful variation of story elements. An example domain of a woman with two or more potential sexual/romantic partners is used to illustrate how such an approach could leverage the dramatic compression of narrative traditions to identify meaningful variations, in order to support coherent composition by authors and increase dramatic agency for interactors.

Keywords: Narrative Schema, Narrative Roles, Narrative Functions, Interactive Narrative, Vladimir Propp, Dramatic Agency.

1 Narrative as Role and Function

Narrative has been described as a primitive of human cognition, crucial to the development of individual psyches and to the collective meaning making that underlies all of human culture [1] [2]. Because narrative is foundational to human cognition, narrative media conventions have been a consistent focus of cultural innovation, from oral pre-history through the invention of theater, prose fiction, films, and television. The advent of digital media has expanded the palette for narrative representations of the world, and has led to the production of new varieties of narrative artifacts, which offers us the opportunity to reconsider the elements of narrative and the nature of our pleasure in creating and sharing stories. Just as games arise from our delight in synchronizing our behavior and sharing joint attention with other people [3], narrative satisfies our need to identify, imagine, and share meaningful sequences of events. Just as games display "mechanics" – like the chase and the race – that remain recognizable across time and media [4] [5], story elements – like the lover's triangle or the revenge killing – are persistent narrative patterns that provide a template for an individual writer's variation and set up expectations in the audience for what might happen next.

Narratives grow up within specific societies and subgroups, and they are elaborated into genres that cluster together smaller patterns into larger units. The similarities in story patterns have been a subject of study for linguists, anthropologists, and narrative

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theorist starting in the 19th century. The Russian formalist Vladimir Propp, in imitation of the work of the systematizing work of biologists and linguists, analysed folk tales into their component "morphemes" of character "roles" and "functions" that serve as a substitution system [6]. The functions in a Proppian system are the key events that form the basis of the plot. For example, the Villain is an important role in Russian folk tales, with the function of "causing harm or injury to a member of a family." The harm might be an abduction, a robbery, or the destruction of crops. If it is an abduction, then it sets up the narrative expectation that the Hero will perform a rescue or the abducted Victim will effect an escape. Other narrative theorists have built upon this structure of roles and functions. For example Emma Kafalenos has proposed a simplification of 10 functions that apply to a wider range of narratives [7].

1.1 Role and Function in Computer-Based Narratives

The role and function approach to narrative form has also been attractive to those who make stories. George Lucas famous drew on Joseph Campbell's hero myth structures [8] in creating *Star Wars.* Most importantly for our purposes, quest-based story functions have provided the foundation for much of the work of interactive storytelling in the past forty years. Questing hero story patterns inspired table-top games, and the earliest computer-based story games – the text adventures [9] [10]. Formulaic quests are now a staple of commercial game design, sometimes drawing on folk culture like myths and fairytales and sometimes on mass culture like comic books and fantasy fiction.

Computer scientists have also applied Propp's structures to story-generation systems. The Universe system used plot "fragments" derived from soap operas as functions [11], inserting characters into roles within these generalized events typical of the genre, and prioritizing "churn" to create narrative interest by frustrating character's goals and increasing conflict. The resultant plot summaries are recognizable as soap opera variations, but the random substitution makes them uninvolving as fiction.

Façade, structured around a visit to a quarreling couple, is the most ambitious attempt to date to extend the expressive domain of stories, avoiding both the fantasy quest of videogames and the literalistic goal-direction of early AI projects [12]. It aims for story variation similar in coherence and variety to Universe, but with a story framework drawn not from formulaic genre fiction, but from the legitimate theater. The central situation of a quarrel between a married couple during a visit by a guest was inspired in part by Edward Albee's *Whose Afraid of Virginia Woolf?* (1966)

Façade is character-driven drama, and it uses dramatic beats similar to Propp's functions but in a much more complex and generative proceduralized substitution system with multiple rules and parameters controlling the composition of an individual beat, the selection of beats, and the assembly of a sequences of beats. The Proppian story has 31 possible functions which can be combined in multiple ways to create stories. For example a story sequence detailing events from Abduction to Rescue might be a single "move" in a larger story moving from Villainy to Marriage. Narrative moves might be combined in multiple arrangements -- continuous, overlapping, recursive, or nested. The moves are similar to phrases or clauses in a

sentence, and, as in language, variation results from both syntax and semantics, combining moves or substituting different tokens for the generic functions within the move.

In story telling simple structures that do not require complex processing to generate or parse can lead to compelling dramatic effects. For example, delaying a rescue by interpolating additional tasks for the hero does not create a computationally complex story, but it can keep listeners on the edge of their seats if they can be helped to keep in mind both the immediate threat and the larger "frame story". This syntactical complexity is a common tactic of epic (oral) storytelling. For example, Odysseus's journey home is told as a series of episodes in which he is threatened by particular dangers, within a larger framework of the threat posed to his wife and dependents by his absence from home. Frame stories are popular in videogames because they are similarly orienting: Mario is on his way to rescue the princess, but must navigate many difficult landscapes and fight off level-specific villains along the way. In folk tales and quest-based videogames the simple syntax of nested, congruent actions functions to focus the listener or interactor. In both media genres, and in multiple films, novels, comic books, and television programs we have learned how to pay attention to a prolonged heroic quest by focusing on individual episode, which are complete in themselves, and which also further the larger plot of the frame story.

Because it is based upon computation, the digital medium affords rich possibilities for variation within generic roles and functions, which can be generated as procedurally generated instantiations of the same objects. *Façade* can therefore focus its variation at a finer level of granularity than the oral folk tales. Although it has only 27 possible beats – four fewer than Propp's top level folktale functions -- each beat is capable of enormous variation, including anywhere from 10 to 100 joint dialogue fragments (for the two computer-controlled characters) consisting of 1 to 5 lines of dialogue [13], and dramatic actions that can last across beat boundaries.

In oral storytelling the structures that support variation are of value to the storyteller but invisible to the listener. There would be no particular pleasure in hearing variant versions of the same oral tale in succession. Variation within an explicit pattern becomes valuable, however, when character roles become identified with particular figures. For example, trickster stories are enjoyable because of the anticipation that the hero, like Odysseus, will outsmart his opponents. There would be a pleasure in hearing about a new challenge, but there would not be a pleasure in noticing variation in role token, such as the substitution of one servant for another in greeting Odysseus on his arrival.

1.2 Parallel Instantiations of Role and Function

In an interactive environment, however, interactors are invited to look for and savor variation. It is expected that the world of a videogame has some randomness built into it so that it unfolds slightly differently on successive plays, creating a sense of immediacy and fresh challenge. More importantly for our purposes, videogames are increasingly expect to provide multiple endings, not just successful and unsuccessful ones, but endings with different emotional tones reflecting different player choices. For example, the popular game *BioShock* (2007) offers three endings in which the

chief enemy is killed, but which vary according to how brutally or compassionately the player has treated the "Little Sister" child-like characters. Two of the three variants have exactly the same commentary summing up the ending, but delivered in different tones of voice. The variants in *Façade* are more like those in BioShock than in the Russian folktales. The playtime is short enough that the interactor is able to repeat the scenario multiple times (and is encouraged to do so and to save the script of successive versions so as to compare and share them). The drama offers clearly contrasting endings – the visitor can be thrown out by either or both members of the couple, and can witness revelations by one or the other or both, failure of the relationship leading to the departure of one or the other spouse, and reconciliation based on different levels of honesty. In successive plays of *Façade* there are also many smaller moments of clear parallelism, such as when the interactor in the role of visitor calls attention to a photograph of the couple on holiday, triggering the beat called ArgueOverItalyVacation, and many moments of graceful transition supported by the flexibility of the generating algorithms.

BioShock and *Façade* are useful representatives of interactive narrative of the 2000's. Both build on earlier formulaic structures and patterns of interaction, and both aim at expanding the expressive power of an interactive narrative experience. The emphasis on replay in both of these very different narrative artifacts (and in even more diverse independent art narratives such as Jonathan Blow's *Braid* (2008) or Tale of Tale's *The Path* (2009) suggest that designers see the discovery of variations as an intrinsic aspect of narrative interaction. Replay is not an extra activity, not part of a meta-game, but is the expected level of participatory engagement.

Variation within formulaic roles is equally apparent in the interactive narratives of the past decade. Avatars in multiplayer worlds offer explicit variations on the roles associated with the fantasy quest, and the common practice of playing multiple characters within the same online world is similar to the practice of replaying a story game to see all the variations on a story function. Both of these practices contradict early assumptions that interactive narrative would be unsatisfying because it would not have sufficient authorial control to produce a single canonical story. In fact, interactive narratives are perceived as more enjoyable to the degree that they offer multiple variations in the instantiation of roles and functions.

Formulaic structure is the skeleton on which all stories are built, but it is a critical commonplace for scholars and fans to lament and ridicule rigid story formulas. For example, the role of a disposable character whose death makes clear the danger to the leading characters, is often called a "red shirt" after the uniform worn by doomed members of the fleet on the original *Star Trek* TV series. The death of the red shirt character is shared joke in fan communities, a too obvious convention that fans jeer at, but that writers of TV shows, films, and videogames still find useful to employ.

As educators of interactive story tellers, as designers of interactive story worlds, and as theorists interested in fostering coherent interactive narrative, we are therefore faced with a challenge of identifying the strategies that exploit the organizing and expressive power of familiar story elements to engage the interactor, and to create compelling variation.

1.3 Variation and Interactivity

As I have argued elsewhere, the digital medium offers unique affordances for storytelling by adding navigable space, encyclopedic capacity, participation, and procedurality to the representational strategies of legacy media forms. When participation and procedurality are well formed we get the characteristic pleasure of agency, and when all three are mapped to story elements we get dramatic agency [13]. One of the most frequent criticisms of interactive narrative is that it disrupts interactivity and undermines the interactor's experience of agency. For example, watching a cut scene in a videogame, or listening to the couple in *Façade* argue with one another can create impatience if the interactor does not feel that their own actions have somehow triggered this event. Variation is not enjoyable in itself, although it may be the result of virtuoso programming or clever use of procedural assets. In an interactive medium, the measure of success is the experience of the interactor. In an interactive narrative environment the experience should ideally align the pleasures of interaction – the experience of agency – with the pleasures of narrative, creating dramatic agency. The question for designer and design educators, then, is how do we align dramatic variation with interactivity?

The element common to interaction and drama is anticipation. Even the relatively passive activity of watching a traditional film or stage play or reading a novel or listening to an oral storyteller involves substantial cognitive activity. A good story will trigger possibilities in our minds, open up questions about motivation (back story) and consequences (what will happen next)? Watching a story within a known genre triggers expectations of roles and functions: a gunslinger and shoot-out in a western; a seducer and betrayal in a romantic drama; a clever doctor and a puzzling medical problem in a hospital drama. At a deeper level of abstraction, we can identify roles and functions in intrinsically dramatic situations, independent of genre, such as a powerful person with secret or a physically weak person in a dangerous situation. Story patterns derive from our common human experience, as it is shaped by familiar media conventions. Narrative design involves explicitly identifying these patterns and communicating them to the interactor in ways that shape dramatic expectations.

In mature story formats, the actions taken by the characters and the objects in the world (sometimes called existents in narrative theory) have been chosen to create appropriate expectations, to cause the audience to anticipate what is likely to happen or to form hypotheses about what happened before that is causing the present tense action In a mature medium nothing happens, nothing is brought on stage (or screen or comic book panel or described in prose) that does not in some way further the action. Whatever the viewer is invited to direct attention to is something that further defines the role (character) or the function (dramatic beat). The existents are not meant to reproduce reality, but to abstract reality into the elements most salient to communicate the few important changes of state that make up the meaningful sequence we recognize as a story.

In interactive environments our genres and conventions of representation are still relatively new compared to theater, novels, film, and television. And when we borrow conventions from these older forms we sometimes obstruct the storytelling rather than further it, because we make the interactor impatient by inhibiting interactivity while we play a tape or display a lengthy document or cut scene. We should be telling the

story through the actions of the interactor. But even when the interactor is active, the activity may not connect them to the story. Many actions within virtual story worlds feel like work – actions that gamers refer to as "grinding," the repetition of unchallenging tasks to build up points for getting to more exciting parts of the game. Other actions feel too literal – a walk through too empty space for example that occupies too much of our real time. We may create a western bar, for example, as an virtual reality installation, with all the carefully selected set decoration of familiar genre movies, but if nothing interesting happens when we pick up a poker chip or order a shot of whiskey or say "Howdy" to the virtual bartender, then our narrative interest is dispersed. The abstraction system will have been built around the convention of a movie set, but the story must be embodied in the interactor's expectations and actions, not in the set design. In digital environments, we do not want to merely visit story worlds and watch stories enfold, we want to actively navigate or enact them, creating the experience that I have called "the active creation of belief " [13].

For interactive narrative to reach the level of expressive maturity of older media forms, we need to find ways to more tightly link the actions of the interactor to the expectations produced by the underlying narrative structures of roles and functions. And we need to recognize the centrality of replay and variation in the enjoyment of digital narrative, by offering variants that create meaningful and readable differences on replay.

2 Narrative Traditions as Abstraction Systems

Our aim, then, is to foster dramatic agency in our own and our students' interactive narrative environments by identifying strategies for creating interactive narratives with dramatic compression similar to more mature media genres. Roles and functions are a reasonable place to start thinking about dramatic compression because they map well, as we have seen, onto the kinds of variation that is already being practiced across multiple formats of interactive storytelling. But we must remember that reproducing the dramatic compression of legacy media is not sufficient. We must aim at a tight coupling between the dramatic elements and the actions of the interactor, linking the anticipation and expectation patterns set up by narrative schema to specific actions whose consequences produce the experience of dramatic agency.

In game design the emphasis is often upon freedom of action. But freedom of choice in a narrative game can sometimes undermine narrative immersion. So-called sandbox games like *Grand Theft Auto* are satisfying to players because of the depth and extent of the world, the number of computer-generated characters, the variety of scenes, and the freedom of motion. But when there are no consequences to our actions, the random killing and destruction may make for exciting play experiences, but they frustrate our narrative expectations.

If we are to exploit the potential of digital environments for capturing complex chains of events with the dramatic power of lasting narratives, we have to pay attention to higher levels of dramatic patterning. We have to reproduce not just the exciting incidents of a gangster film, but the moral physics of the gangster film, where killing may be commonplace, but is never without consequences, and where story role

is directly linked to behavior. We have to recognize that story patterns are powerful cultural abstractions, encapsulating not just genre actions (like robbery) but genre themes (like punishment, revenge, betrayal, greed). This will require looking at story material as part of encapsulated systems of meaning. Robbery, in such a view is not a single act of a gangster character, but part of a plot in which overreaching and betrayal are key possibilities, and in which characters are defined along a well-calibrated spectrum of good and evil, with different kinds of actions available to each. To make an exciting game, we need only look for high action incidents and make them playable. To make a compelling narrative, we have to look for the underlying causal structures that motivate those actions.

2.1 Juxtaposing Variants

Our cultural heritage of story patterns is a shared mental modeling for understanding the relationships among human beings. A single play is a mimetic presentation of one situation, but the heritage of plays and novels and other story forms about the same situation make up a range of variation, a set of overlapping and competing mental models that allow us to distinguish among different situations, and to see the same sequences in many possible ways. Digital narrative can externalize this wider range of variation, while ordering it into focused areas of contrast and complementarity, so that we can think about the many ways in which a compelling scenario might play out.

A touchstone for me for this kind of narrative structure is a student project by Sarah Cooper called *Reliving Last Night* (2001) in which the same three characters – a young woman, her new potential boyfriend, and her old boyfriend - meet under circumstances controlled by three parameters: what she wears (dress or pants), what she serves the new friend (vodka or soda), and what music she plays (3 choices) while they are alone together. Depending on what choices are made by the interactor, the several segments of the story play out in clearly contrasting ways. The interface allows the interactor to change parameters and play the contrasting versions of any segment of the story – the equivalent of Propp's functions -- one after another rather than branching through on repetitive replays. The story is compelling to me because it lets us see a range of possibilities more clearly than we could through successive linear plays (as in a Choose Your Own Adventure Book) by juxtaposing the same dramatic moment under multiple conditions. In addition, each of the parameters controlled by the interactor carries with it clear narrative expectations (Would they get along better if she had put on a dress or served coke instead of vodka?) drawn from the familiar narrative patterns of the romantic comedy. The central situation, the arrival of the old boyfriend while the protagonist is alone with the new potential boyfriend, belongs to the familiar pattern of the romantic triangle. The story works because the underlying plot is readable from the specific details, with familiar story functions such as awkward flirting, acknowledging attraction, jealous confrontation, moving the plot along without losing focus.

Our story traditions make up an abstraction system for understanding ourselves and the world around us, with character roles (like the jealous lover) and event "functions" (like the first date) serving as containers – encapsulations – of more complex and variable detail. Professional writers consciously exploit such patterns, and audiences are increasingly aware of them, because of the saturation with fictional

narratives that is a salient feature of the contemporary world. Computer scientists creating interactive narratives subvert the dramatic power of such situations when they make events probabilistic and causality diffuse, instead of funneling the potential events into fewer and more dramatically meaningful actions.

We could implement *Reliving Last Night*, for example, by making the alcohol consumption a minutely calibrated spectrum instead of a binary variable. We could increase the opportunities for the interactor to make a choice by elaborating a lengthy dialog in which the degree of inebriation would affect what kind of responses are available, but it would only be one of a number of factors in how well the couple got along. This might seem like the more computationally challenging and realistic approach, because after all people rarely notice when they are too inebriated to behave appropriately. But it would make for a much less involving story with unclear connections between the interactor's choices and the resulting actions, and therefore a much less successful interactive experience.

Dramatic agency depends upon choices that have a readable effect in the story world and that align with the deeper structures of expectations that we bring to any narrative experience. The ideal interaction changes a particular story function in a readable way that reminds the interactor of the overall narrative schema. And in digital narrative we can make the choice repeatable, reinforcing its importance by making clear the effects of alternate actions.

In teaching design I emphasize the importance of scripting the interactor [15], of creating patterns of expectation that interactors can act upon and then rewarding those actions with appropriate responses. In the design of narrative environments, it is important to align the expectations with story elements. We can think of this framework as made up of three overlapping layers, with a dramatic situation at the base level, genre expectations and social rituals (familiar patterns of interaction) at the middle level, and media conventions like game mechanics and familiar interface icons at the top level. A successful narrative design motivates dramatic curiosity at the base level, focuses it into specific expectations and actions at the middle level, and concretizes the actions into single mouse clicks or gestures at the top level. In a well-designed story system execution of the action would then produce a result that will reinforce the dramatic interest in the underlying situation and lead to the next interactive engagement.

2.2 Dramatic Compression of Role and Function in Traditional Stories

We can identify strategies of variation within the constraints of dramatic compression by looking at classic narratives that have stood the test of time. Since it is useful in digital design to be as clear as possible about abstraction layers, I will start with a dramatic situation independent of media conventions or genres: the scenario of one woman with two male sexual partners or suitors. This pattern brings to mind many variations, one of which is the adultery scenario in which the woman is married to one of the men but attracted to the other, a pattern that is the basis of two of the most lasting stories in Western culture, Helen of Troy, whose capture/seduction by the handsome Trojan Paris over her Greek husband Menelaus, precipitating the Trojan War, and Guinevere whose affair with Lancelot leads to the fall of her husband, King Arthur, and his Knights of the Round Table. In both stories, the fulfillment of sexual

passion leads to political turmoil. In the *Iliad*, the Helen-Paris-Menelaus story, is nested within the larger frame story of the Trojan War, which is most clearly focused as the battle between Achilles and Hector. Menelaus and Paris are minor figures in comparison, and their battle is inconclusive, while the entire action of the epic builds to Achilles' defeat of Hector. Paris is less important in himself than as the less manly brother of the heroic Hector. Helen's complicity in her captivity is ambiguous and her loyalties are mixed. The tribal patriarchal values of the time make the contest between the men the central action of the epic.

A similar story of sexual transgression against a king is told with very different emphasis in the King Arthur legend, which like the story of Troy, has its roots in oral storytelling. In the Arthurian legend [14] Lancelot starts out as a heroic figure, a loyal knight to King Arthur and a chaste admirer of Guinevere. A key difference in the schema from the Helen of Troy story is the emphasis on Lancelot's ties of duty to Arthur, whose role as King, and particularly as an ideal king, reinforces the importance of the betrayal by his Queen and his favorite Knight. This makes for a new complexity in the love triangle. In addition, Guinevere is portrayed as similarly caught in conflicting emotions. The emphasis on resistance of temptation and conflicted loyalties contrasts with the simple tug-of-war plot of the Helen story in which her state of mind does not explicitly affect the action. In addition, the story includes the figure of Mordred, who like Lancelot betrays Arthur and covets Guinevere, but who is a wholly evil character who directly brings about the fall of Camelot. Mordred is the antithesis of Lancelot just as Hector is the antithesis of his brother Paris.

Looking at these two stories together can help us to articulate a pattern of potential variation for a romantic triangle plot. If we were creating a role and functions associated with the seducer based on Paris, we would not dramatize his encounters with the cuckolded husband, but focus on susceptibility to lust. We would reinforce the importance of this trait as the moral focus of the story by providing him with a contrasting character, like Hector. Variations in functions would focus on displaying how differently the two characters respond to the same temptations and to the same opportunities for selfless heroism. Paris/Hector pairs need not exist in a universe of Greek mythology or even soldiering. They could be fraternity brothers or detectives or boyfriends of Desperate Housewives. The important abstraction is the indifference of Paris to the consequences of his appetites, and the dutifulness of Hector in any situation that requires taking responsibility for others at his own expense.

The Lancelot/Guinevere story would require a more active role for the female figure, and a more prominent role for the legitimate mate, the husband figure like King Arthur. The role of Lancelot would include functions involving tests of loyalty to King Arthur, which would allow for contrasting scenes, in which he can demonstrate his Hector-like dutifulness and heroism in one context, while betraying the Arthur figure in another situation. The roles would have to involve obligations between Arthur and Lancelot, and between Arthur and Guinevere. He would have to be portrayed as a source of social order and a good person who does not deserve to be betrayed. But at the same time the attraction between the Lancelot and Guinevere characters would have to be believably strong. And the figure of Mordred would have to be introduced as a continuing threat, connected to the overarching frame story of the destruction of Camelot, a story that would have to be elaborated in its own set of

character functions that would parallel the romantic plot, and whose danger would increase as it is reinforced by destructive turns in the romantic plot.

The stories are inflected by the genres in which they were most memorably told, Helen's story as an epic poem focused around war, and Guinevere's story as chivalric prose. Both stories have long oral histories before they were written down, and both exist in many alternate versions from multiple historical periods, so there are other ways of abstracting and comparing the story elements. But the parallels and contrasts that I have drawn are among the most memorable ones from the best known versions of the stories. They serve to make clear some generalizable strategies of dramatic compression that we can think of as principles of design for maximizing meaningful variation in interactive narrative:

1. Limit the number of main characters and give them clear relationships to one another based on roles within a recognizable dramatic situation.
2. Define characters along a spectrum based on a value system that is central to the story, such as chastity in a love story, courage in a war story, etc.
3. Draw clear contrasts between parallel characters, such as rivals, friends, enemies.
4. Look for opportunities to use characters as foils for one another, emphasizing the similarities and differences between them through parallel functions.
5. Create narrative events that combine functions of an overarching frame story and a coherent nested sequence.

These strategies could be used to create parameterized story systems capable of generating meaningful variants of the same situation. But interactive narrative also requires that we create patterns of interaction that lead to the experience of dramatic agency.

2.3 Roles and Functions as a Framework for Interaction Mechanics

Imagine that we have in place a parameterized representation of a story system in which a choice of sexual partner leads to social disruption, featuring story roles and functions drawn from the Paris/Helen and Lancelot/Guinevere stories, but generalized so that they can fit characters in a contemporary story. In order to move from the abstract story representation to an interactive artifact we must specify the genre in which our story will be told.

One way to do this is to move away from the triangulated pattern and the combat between the two males, and to focus on the woman, giving her more agency to choose a suitor. We can transpose the epic story into the contemporary world, and offer our central figure, whom we can call Gwen, a choice of multiple suitors, whom we can model roughly on the men in the Helen and Guinevere stories. We can choose a familiar genre in which to tell the story – such as high school melodrama. The social order represented by Camelot can be transposed into a high school election or an upcoming sports contest or a Prom. The rivalry for the beautiful woman can be transposed into the search for a date. The dating story would be nested inside the social order story: the heroine, Gwen, is trying to prepare for the election/sports contest/prom. She has a series of encounters with each of the potential suitors and the villain figure.

The initial situation should align Gwen with the Arthur figure – we can call him Artie. Artie is the conventional romantic choice, but a little boring and bossy. However, he is not as bad as his brother Manny (the Menelaus figure) who is much more controlling and much less attractive. The other young and virile suitors would be Peter (promiscuous but effusive), Lance (virtuous but untested by passion), Morton (brutal and resentful of Artie), and Hector (the most reliable guy, but one whose sense of duty may make him unavailable).

Creating an interactive narrative around these characters may involve further compression – perhaps making Manny and Morty into a single figure, and combining Hector and Lancelot as two possible directions for a single character to grow. It would also involve creating situations in which Gwen could choose which person to trust in a particular situation, and creating contrasting versions for each of the possible choices. For example, she might have a young sister visiting her and ask someone to babysit: Peter would abandon the child to flirt with another girl, Lancelot and Hector might be equally responsible with Lancelot taking her on a picnic and Hector taking her to a science museum. Maybe Artie would be the only one to engage her in conversation that shows his nurturing, empathetic side and gives him information that helps him to become closer to Gwen.

Also as soon as we transpose the situation to high school we realize that we cannot leave the central female figure so isolated as Helen and Guinevere are in their stories: she would be surrounded by female friends, which we might characterize as foils based on story patterns from Jane Austen novels. Functions in this multiform story world would be based on the kinds of events that populate teen movies – party invitations, drag races, drug and alcohol abuse – but they would all be cast to emphasize the differences among the romantic rivals, and to maximize opportunities for Gwen to make dramatically significant actions that further the frame plot of Artie and the social order and the nested plots of sizing up the rival alternate suitors. For example, Gwen might have to choose a seat in the cafeteria that is closer to the flirtatiously attractive Peter or to the shy but smitten Lance; or she might have to decide whether to help Artie raise money for charity or send a friend who is flirting with Peter.

My point in describing this sample story is not to argue for its excellence as narrative art, but to offer an example of a design process that consciously draws on established story forms and looks for ways to maximize dramatic compression through the conscious use of roles and functions.

Focusing on narrative schema such as roles and functions does not mean that we mindlessly reproduce the same story by plugging in random variations like words in a Mad Libs template. Narrative schemas persist over time, but they also change as cultures change, as authors inflect them, and as different aspects of human experience become more salient to audiences. New social realities change our notion of cause and effect patterns, and lead us to invent new ways of narrating our experiences. Computational representation offers the possibility of capturing complex sequences of contingent events at multiple abstraction levels, and under multiple organizational frameworks, so that we can focus our attention, as individuals and as members of a common culture, on expressing and sharing our cause and effect assumptions. As Merlyn Donald points out, our external media of representation serve as ratchets of culture, augmenting the functions of human memory, and helping us to get control

over ever more complex systems of knowledge and social organization [24]. One of the most important legacies of our media traditions is the expressive abstraction system that we can recognize as story schema. Bringing this abstraction system into the powerful representational medium of computation is a rich source of design challenges, which can best addressing the design goal of dramatic agency, with narrative strategies that maximize of dramatic compression.

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