Systematic Modeling of Stories and Role Development of Storyteller for Interactive Multimedia

By
Dinesh S. Katre
Center for Development of Advanced Computing (C-DAC)
A Scientific Society under Ministry of Information Technology, Government of India,
Agriculture College Campus, Near District Industries Centre, Shivaji Nagar, Pune 411005, India.
Tel/Fax: 91+020+5533250   e-mail: dinesh@cdacindia.com

ABSTRACT:
The paper highlights the importance of Systematic Story Modeling, which is achievable through the collaborative efforts of Technical Author and Story Author. The approach to story modeling is detailed by elaborating three basic models such as defined, evolving and *epicentric* stories. Most of the interactive stories are either presented in the book like navigation format or like typical websites offering total access to information. In the first case there is absence of novelty in presentation and in the second case the soul of story, the experiential narrative, which is lost due to free access. User participation in the TV serials and remote control as an instrument of user empowerment is analyzed. Comparison between conventional storytelling and interactive storytelling is documented by assessing some examples, to bring out the essential characteristics of storytelling for incorporation in interactive presentations. The deliberations settle at giving selective control to both 'user as navigator' and 'software as storyteller' in interactive stories.

KEYWORDS:
Systematic Story Modeling, Defined / Evolving / *Epicentric* Stories, Interactivity, Role Development, Experience Design

1. INTRODUCTION:

Storytelling is extremely important for children especially in the formative years. It's a tradition that has been instrumental in transferring the human culture, wisdom, experiences of survival, dos and don'ts of life, values, sense of humor and poetic perspective, languages and sciences. There is a plethora of fables, mythical, mythological, historical, folk, parables and fictional stories but storyteller is the only inevitable element among all the forms of stories. Few decades ago, the stories were mainly disseminated through mouth of word during campfires and then through printed books. In the modern age, the major dissemination of this internal universe is happening through modern communication media like radio, television, audio, videotapes, films, multimedia CDs and Internet in addition to the printed books. The role of storyteller gets

fairly articulated in the audio, video and film media but the interactive software can offer greater possibilities due to its interactive nature. There have been several experiments in television and computer media to allow user participation in the molding and presentation of stories. The following deliberations record the observations of the author and analyze the issues relating to modeling of stories and role development of storyteller for interactive multimedia.

2. STORY MODELING:

Since the computers lack the ability to be imaginative and create stories from nothing, the human input becomes inevitable to provide the elements of story (Fraser, 2000). Most of us believe that some people are naturally gifted with the art of storytelling and writing. But the presentation of stories using computer involves lot of analysis and planning. Wedding narrative stories with interactive stories is extremely difficult as they use passive expressions (Barrett, 2000). When you write the story on paper, it strictly follows one type of linear order. Applying interactivity over such story is quite catastrophic as it breaks the order of sequences, changes the speed of events and presents a distorted version. It is for this reason the Collaborative effort of Technical Author (Interaction Designer) and Story Author becomes essential. They both together are expected to conceive the systematic model of story (The visualization of story in a system interpretable form). This amounts to rewriting, reordering and restructuring of the entire story for accommodating the interactivity.

2.1 Development of Systematic Story Modeling involves detailed study of following components:

1. Important characters that the user must know
2. Characters not requiring introduction
3. Relationships between the character
4. Order of appearance
5. Events
6. Locations of events
7. Desired order of events
8. Linkages between characters and events
9. Events which do not follow strict order
10. Pace of events
11. Plot Analysis (Sgouros, 1997)
    Plot analysis and study of other components in story can help in the identification of interface metaphors that could be rendered using suitable rendering techniques (Katre, 2002). The rendering style of interface metaphor can contribute to storytelling and user experience design (Erickson, 1996).
12. Possible starting points of the story
13. Possible ending points of the story
14. The goal of author (Fraser, 2000) (If certain ending possibilities are not meeting the desired goal of story the author may disqualify them)
15. Identify places where the storyteller can intervene and set a dialogue with the user
16. Identification of constrained and flexible pathways of navigation

17. Possible variations in presentation style
18. Targeted user profiles
19. Scope of personalization
20. Experience / impact / dramatization details
21. Experience Design

Systematic Story Modeling is basically engineering of interactive story. Following examples are indicative of how the basic model of story could be understood by the Technical Author (Interaction Designer)-

Stories written by Sir Arthur Conan Doyle or Alfred Hitchcock or even other detective stories have generally chosen non-linear weaving of events. Though such type of stories were meant to be written and read linearly. The diagram 1.0 reveals the back and forth sequencing of events. The standard order of events would be from Part 1. to Part 5. but the reader may not find it as puzzling and exciting as it does when **the author shuffles the order of events while connecting them at appropriate points.**
If a multimedia designer proposes to give separate links to all five parts of the story for making them easily accessible to readers for achieving the so called 'interactivity' then the reader may not understand the story at all. E.g. if the reader directly jumps at part 5. of the novel then he may fail to make sense of the story because this part is not authored as the beginning of story.
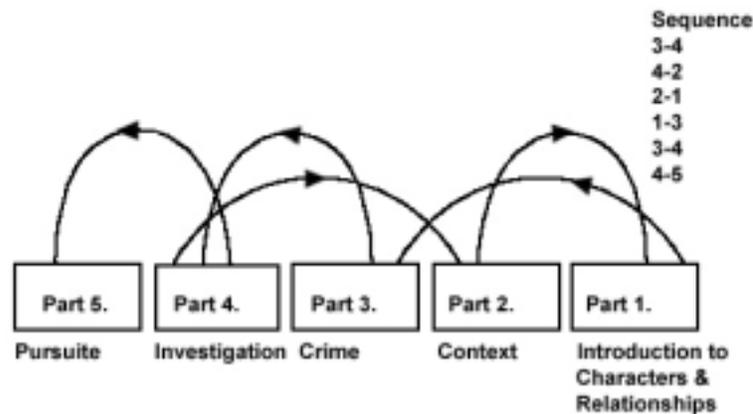

Figure 1. Non-linear weaving of events in a story

In this type of approach the author is able to achieve-
- Unpredictable story plot
- Impart the sense of discovering to readers as the story progresses
- Add the value of design to the composition / structure of events
- Reading becomes highly involving and impacting experience

2.2 Model of Defined Stories:
The standard story format has well defined Main, Supporting and Peripheral characters with different relationships as depicted by different types of connecting lines in Figure 2. The author develops the story through various events and around the characters. In this approach the author (Storyteller) is in full command of the story and can decide the

characters, relationships, events, speed and the length of story. The author is able to tightly weave an interesting story that can mesmerize the readers. TV serials based on such well-written stories have had very good impact on the viewers but naturally the serials are not very long in terms of number of episodes e.g. Malgudi Days by R. K. Narayanan, Wagle Ki Duniya by R. K. Lakshman.
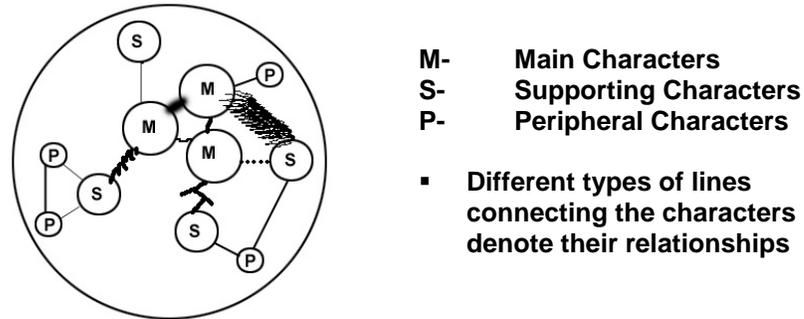
M-   Main Characters
S-   Supporting Characters
P-   Peripheral Characters

▪   Different types of lines
    connecting the characters
    denote their relationships

Figure 2. Model of a Linear Story

2.3 Model of Partly Defined / Evolving Stories:

There are many such TV serials, which have a few central characters, and they keep introducing new characters in the story. The new characters bring their own peripheral / satellite characters and a new story as shown in Figure 3. The scriptwriter has to somehow link them with the central theme and thus the serial keeps unfolding episodes after episodes. The characters from TV serial also celebrate festivals during the festive occasions in real life while keeping aside the main track of the story e.g. a popular serial Kyonki Sas Bhi Kabhi Bahu Thi is modeled on this pattern.
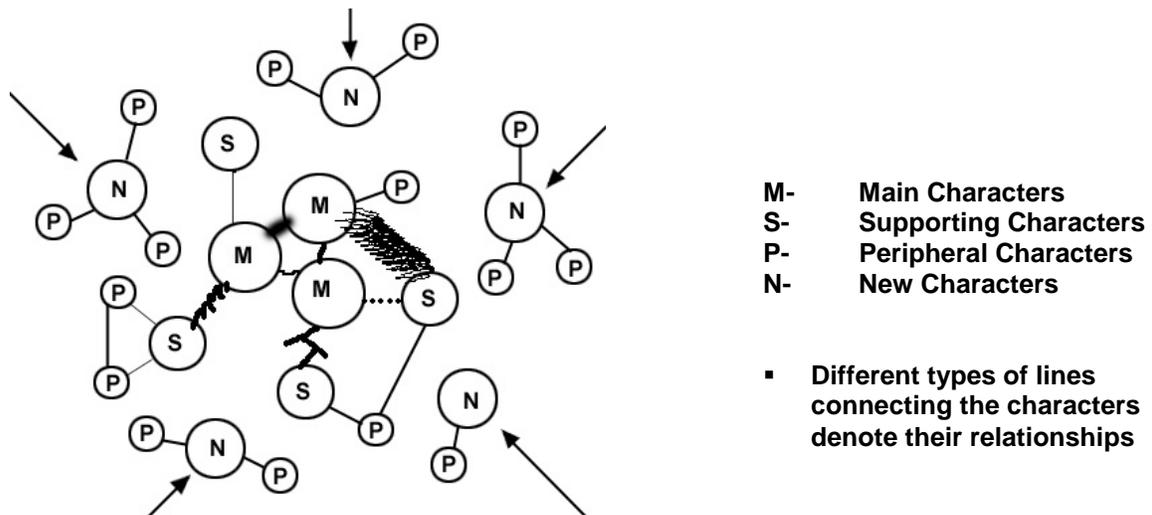
M-   Main Characters
S-   Supporting Characters
P-   Peripheral Characters
N-   New Characters

▪   Different types of lines
    connecting the characters
    denote their relationships

Figure 3. Model of Evolving Stories

2.4 *Epicentric*[1] Model of Stories:

The epics like *Mahabharata, Ramayana,* Bible, etc. have hundreds of characters and stories that are interconnected. There are central events in all the epical stories. The

characters and their own life stories are interwoven with the central events. *Mahabharata* has important characters like *Lord Krishna, Ekalavya, Kunti, Karna, Pandavas, Bhishma, Parshurama,* etc. There are hundreds of stories connected to each of them and they interconnect with the central story of *Mahabharata.* Most of the renderings of *Mahabharata* have not been able to cover all interconnected stories. There have been exclusive books and TV serials on *Lord Krishna, Kunti, Karna, Bhima, Arjuna, Ekalavya,* etc. Indrajal Comics have produced several such stories focusing on individual characters. Every story has also projected the individual viewpoints and their contributions in *Mahabharata.* Such *epicentric* stories can be best presented using interactive media. The prevailing renditions of *Mahabharata* have offered single point beginning and ending. But such complex epics can be presented with multipoint beginnings and endings.

In case of *epicentric* stories, the user will be able to start from anywhere, know the central story with a unique viewpoint and reach different conclusions at the end of it.
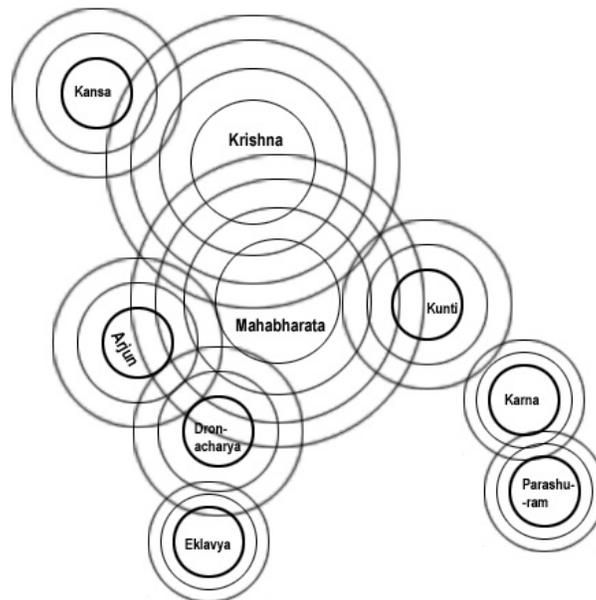

Figure 4. Model of *Epicentric* Stories (Stories within a Story)

The Figure 4. is indicative of some of the sample stories from Mahabharata. Models of defined, evolving and *epicentric* scripts are adaptable for story presentation using computers. The models of evolving and *epicentric* scripts have more potential for designing highly interactive stories as they allow variable molding of story, multi-layered and non-linear sequencing of events, response to external intervention and wider scope for navigation.

In the multimedia rendering of Dnyaneshwari project, lord Ganesh presented as the lord of knowledge and wisdom. Several links are provided to ancient philosophical literatures and knowledge scriptures like *Vedas, Upanishadas, Puranas,* etc. (Katre, 1999). It is similar to the *epicentric* model of stories described here.

Lets look at the common examples of viewer interventions affecting the flow of story.

2.5 Television Viewers Molding the Script:
Nowadays, there are number of TV serials that request for suggestions from viewers at the end of every episode about how they would want the story to unfold further. It is known that the stories have been modified as per the most voted suggestions of viewers. This is an example of how the television media has allowed the participation, interactivity and influence of viewers in storytelling. The case is analyzed as under-

The storyteller:
- Director / Script writer of the serial

Nature of Interactivity:
- Offering suggestions for future episodes within the given timeframe.

Influence:
- Based on majority vote the story gets modified.

Mode of operation:
- The storyteller has to build the initial story and introduce the characters with different shades of personalities. The story is then left to be unfolded by the audience.
- Scriptwriting becomes an online activity.
- Many scriptwriters have to be engaged for maintaining the inflow of ideas.

Advantages:
- The scriptwriter and the director still remain in command of the story and can decide whether to accept the suggestions and also plan for future episodes.
- It is helpful for managing large number of episodes.
- Such participation can be allowed due to longer length of stories unfolding over hundreds of episodes and the shooting of the serial continuing simultaneously. If it were like a movie, which is shot and edited completely before its release, then the viewers would not have any influence over the story.
- This technique has served as a gimmick for attracting the attention of viewers.

Disadvantages:
- Reduced element of surprise
- Very less is left to be visualized
- The story looses its focus and is likely to go haywire
- Giving suggestions about how the story should unfold hampers the creativity of storyteller
- The element of storytelling is reduced
- The attention gained from viewers has benefited the advertisers more than the viewers

It's a good idea to have participation of viewers in the television serial. But it also showcases the bankruptcy of ideas among the scriptwriters as they end up becoming just 'writers' or 'facilitators' for the television viewers.

2.6 Viewer Empowerment through Remote Control:
Television has taken place of those elders who used to tell stories to children about 25 years ago. The TV not only tells stories for children through some dedicated channels and programs but also for adults. The channels are telecasting various serials round the clock and the viewers engrossed in channel surfing with the help of a remote control. The remote control offers some amount of interactive control for switching to the channel and the program of your choice. The case is analyzed as under-

The storyteller:
- Several storytellers are presenting stories simultaneously through multiple channels and programs.

Nature of Interactivity:
- The viewers can switch to the story of their choice by pressing the button of remote control. The television programs unfold linearly and switching through channels is a non-linear activity.

Influence:
- The viewer has the choice to select the desired channel and the program.

Mode of operation:
- The producers have to keep advertising about the serial for getting the attention of viewers.
- Include instant, frequent and episodic excitements in the script so that the viewer could be hooked to the serial whenever he gets on the particular channel.

Advantages:
- The interactivity of remote control offers greater advantages to the viewers than the director or the scriptwriter of a serial.
- The storyteller has to worry about being switched off or not getting enough time for involving the viewers.

Disadvantages:
- Many viewers end up spending several hours before the television and yet not attending even a single program properly.
- The remote control disrupts the act of storytelling and allows the attention of viewer to waver.
- Naturally, the television tells hundreds of stories but many of them remain unheard and unattended.

In short, both examples described in points 2.5 and 2.6 are demonstrative of the fact that viewer intervention / empowerment is fashionable but impeding for the storyteller.

3. CONVENTIONAL STORYTELLING VERSUS INTERACTIVE STORYTELLING:
The term 'storytelling' implies that the reader, listener or the viewer gives entire control to the storyteller / author / movie scriptwriter / director. He/she readily surrenders and prefers to enjoy the journey through the story. **The storytelling is an act of 'telling' and 'receiving'. Basically the true navigator of the story is the author or the storyteller himself and the audience just follows him. The navigator takes the audience to the**

important spots and happenings in the story through interesting pathways with preconceived delays, acceleration in the speed and surprises.
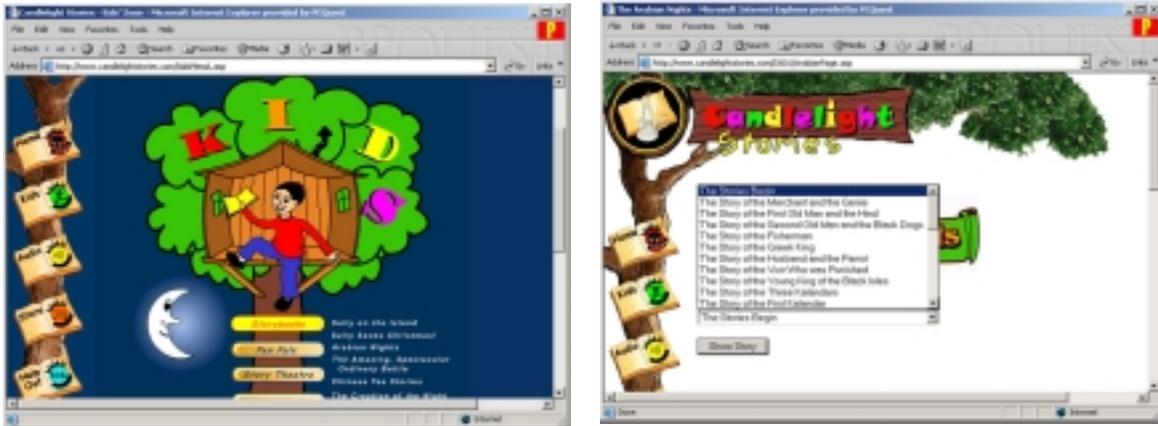

Figure 5. Stories presented in Information Accessing Format on Web

Most websites and CD ROM titles provide index of stories as links and one is able to choose the story. The Figure 5. shows that one is able to select various categories of stories such as Chinese Tea Stories, Arabian Nights, etc. and then choose the title from the list. On selecting one of the titles what you get is a story in plain text form. The Candlelight Website shown as an example has pretty large collection of stories but no element of storytelling in the presentation. The GNOME's Bedtime Stories is also one such website hosting several stories presented in book format. The website is rich with visuals, flash animation and beautiful background music but has simple clickable index of chapters. It appears as though the parents are expected to read the stories from these website for their children.

3.1 Interactivity Eliminating the Storyteller:
In the name of 'user empowerment' many times the interactive control of the story is given to the users. Next and previous controls are provided with page turning effect, which is very similar to the book metaphor. The links are provided to the various events in a story. Search facility is provided for jumping to the arbitrary portions related to certain keywords. The user may just use the search facility and solve the mystery of the story. The user is permitted to jump to conclusion or to the moral of story with a click of button. Many websites are presenting the biographical stories in a similar manner. Such type of interactivity is killing the storyteller and puncturing the surprises. The experience of journey through the story is also eliminated.

In this modern approach, the user becomes the navigator. The control has shifted from the storyteller to the user. The interactive presentation of stories through web or multimedia technology does prove its potential but then it no more remains 'storytelling' and becomes mere 'information accessing'.

This is primarily because the interactive media has evolved with the focus to offer dynamic and quick access to information.

The equations given below are very insightful:

Interactive Storytelling – Experience = Information Accessing

Information Accessing + Experience = Interactive Storytelling

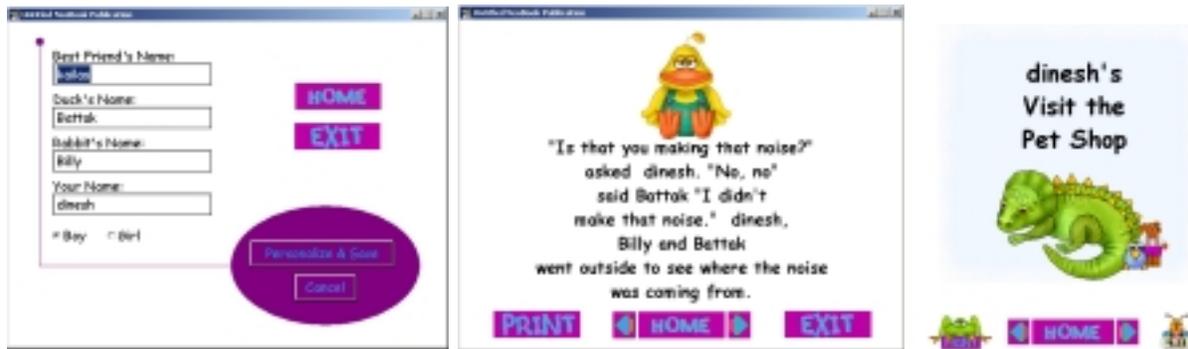## 4. ROLE DEVELOPMENT AND EXPERIENCE DESIGN:

Figure 6. Personalized Storytelling

4.1 Personalized Storytelling:

The Figure 6. shows the screenshots from an interactive story entitled as 'The Beautiful Egg' designed for 6 to 8 years old children. The personalization feature requires you to enter your Best Friend's Name, Duck's Name, Rabbit's Name and Your Name as these are the main characters in the story. The software notes the inputs given by you and then the same names start appearing throughout the story whenever the particular characters are referred. The second screenshot of Figure 6. indicates the modified names as part of the story. The third screen shot shows that the title of story is replaced with my name with myself as a picture of Dinosaur.

In this example the software has attempted to emulate at least one type of behavior of the storyteller i.e. to pick up the name of child or other familiar names and narrate the story. Personalization of names in the story has limited effect as it gets reflected only in the text. The story is browsed through standard next and previous controls.

4.2 Personalization at Various Levels:

Choices could be provided for:
- The picture of storyteller as a Teacher, a Friend, a Guru, Pet Animals, Birds, Fictional characters, etc.
- Suitable change in voiceover based on the choice of storyteller
- The narrative style and certain behaviors of the software may also change e.g. the pet animal may offer 'A piece of Bone' as a gift or the friend a toffee and the Guru a blessing or boons at the end of story.
- Attention grabbing interventions by the storyteller

The storyteller asks the user-
- Guess who was the culprit?

- Also while repeating the previously told information pose a question for the user recollect referred information
- What would you do in such situation?
- What is the moral of story?
- Can you quote similar instances from life?

It's possible to provide options to these questions and the user could be asked to select the appropriate option or enter his/her responses as text input.

4.3 Depth of information:

The software can be designed to control the depth of information and complexity depending on the user profile. We are working on a project called 'CD on Life and Works of Srinivas Ramanujan the Mathematical Genius'. The information has three types of audiences with different levels of interests-

1. School Children-   Biographical Story of Ramanujan and introduction to mathematical games
2. College Students-   Simpler parts of Ramanujan's Mathematics
3. Mathematicians-   Complex Mathematics / Research Papers

The storyteller should be able to present information with appropriate proportion of complexity and detailing. As Prof. K. Srinivas Rao, an imminent scholar in mathematics and our guide in this project says, the biographical story is like the icing on the cake for motivating the students to study the mathematics of Ramanujan.

5. SUMMARY:
Navigator and Storyteller both as Controllers:

Both 'the user as navigator' and 'the software as storyteller' should control the interactive stories. If entire control is given to the user then the surprises and the experience of journey would be lost as mention in point no. 3.1. There should be predefined portions in the story where the software should restrict the entry of user unless he/she has gone through certain parts of story. There should be mechanisms of persuasion for ensuring this aspect. This necessitates certain amount of linearity in the technique of presentation. As alternative, the user may be given choice of 'Storytelling' or 'Information-accessing' modes. The 'Information-accessing' mode will not restrict the user and he will exercise full control as navigator.

It is possible to change the quality of experience in terms of font style, layouts, color schemes, interface metaphor, music and narrative style depending on the user profiles. Every type of 'experience' that you propose to impart needs to be designed needs with proper planning and rendering for variable approaches. Also, the software development becomes a prominent activity in the implementation process unlike a typical multimedia project. Role development, Experience Design, Variable Presentation can be visualized effectively with the help of systematic modeling of stories as elaborated in point no. 2.

FOOTNOTE:

[1.] The author has derived the term *epicentric* from the word epicenter referred in relation with earth quaking. It is to convey the nature of events and stories surrounding the characters, which are already part of a larger story or epic like Mahabharata. It is several storybooks and biographies contributing one large epical story.

REFERENCES:

1. Barrett, Mark, (2000). "Graphics: the language of interactive storytelling", ACM SIGGRAPH Computer Graphics Volume 34 , Issue 3 (August 2000), ACM Press New York, NY, USA, pp. 7 – 10.
2. Erickson, T. (1996). "Design as storytelling", Interactions, Volume 3, Issue 4 July/Aug. 1996, ACM Press New York, NY, USA, pp. 30 – 35.
3. Fraser, Glen D. (2000). "Real-time interactive storytelling", ACM SIGGRAPH Computer Graphics, Volume 33 , Issue 4 Nov.2000, ACM Press New York, NY, USA, pp. 14 – 16.
4. Katre, Dinesh, S. (1999). "Multimedia Rendering of Spiritual Texts" In Proceedings of International Conference Virtual Systems and Multimedia (VSMM 1999), University of Abertay, Dandee, Scotland, UK., pp. 500-507.
5. Katre, Dinesh, S. (2002). "Unconventional Inspirations for Creating Software Interface Metaphors" Proceedings of International Conference on Media and Design (ICMD 2002), Volume I, Mumbai, India, pp. 1-15.
6. Lakoff, G. (1992). "The Contemporary Theory of Metaphor," in Metaphor and Thought. Edited by A. Ortony, Cambridge University Press, Cambridge, pp. 202-251.
7. Sgouros, M., Papakonstantinou, G., Tsanakas, P. (1997). "Dynamic dramatization of multimedia story presentations", International Conference on Intelligent User Interfaces, ACM Press New York, NY, USA, pp. 87 – 94.
8. Candlelight Stories Website
http://www.candlelightstories.com/kidsMemA.asp
9. The GNOME's Bedtime Stories
http://www.bgammon.freeserve.co.uk/contents.htm
10. Personalized Multimedia Storybooks
http://www.billybear4kids.com/story/personalized/storybooks2.html