

Visualizing Khasak: An Interactive Spatial Narrative based on the novel Khasakkinte Ithihasam

Submitted in partial fulfilment of the requirements
of the degree of Master of Design

By

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Approval Sheet

The Interaction Design Project 3 titled "Visualizing Khasak - An Interactive Spatial Narrative based on the novel Khasakkinte Ithihasam" by Vishnu K (Roll Number 176330006) is approved for partial fulfillment of the requirement for the degree of 'Masters in Design' in Interaction Design at the Industrial Design Centre, Indian Institute of Technology, Bombay.

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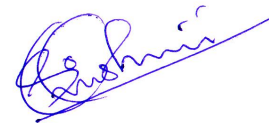
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A handwritten signature in blue ink, appearing to read 'Vishnu K', with a long horizontal stroke extending to the right.

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Abstract

Khasakkinte Ithihasam is considered as one of the most important work of fiction in Malayalam literature. The novel was written by O.V. Vijayan and published in 1969. Khasak, the fictional village in which the novel is set, is inspired by a real village named Thasrak and holds a pivotal position in Vijayan's narration.

Literary cartography works are not new but most of the work in the domain is based on western literary works. Development of geo-technologies and visualisation techniques have created increased interest in the domain of literary cartography as it creates opportunities for new ways of analysis and interpretation of literature, and takes the domain to a larger group of audience and practitioners.

The project visualizes the fictional village of Khasak and designs an interactive spatial narrative based on the novel Khasakkinte Ithihasam. The project focuses on a relatively unexplored theme in the novel, the ecology of Khasak, to create the spatial narrative.

The outcome of the project is a network of interactive 360 degree illustrations, which visualizes important settings in Khasak and tells the story of Khasak's ecology. The design will be evaluated for its usability and the narrative experience and the results will inform the final design.

Table of Contents

1.	Introduction	1	9.	Design	28
2.	Scope	4	9.1.	Visualizing Khasak	
3.	Initial Direction	5	9.2.	Creating an interactive narrative	
4.	Research	6	9.3.	Designing Interactions	
4.1.	Secondary Research		9.4.	Final Design	
4.2.	Field Visit		9.5.	Prototypes	
4.3.	Interview with Experts		10.	Evaluation Plan	45
5.	Insights	15	11.	Conclusions	46
5.1.	Themes in the novel		12.	References	47
5.2.	Khasak and Thasrak				
5.3.	Khasak's connection to Thasrak			Appendix A	
5.4.	Interpretations of the novel				
5.5.	How to represent Khasak?				
6.	Redefined Focus	18			
7.	Explorations	19			
7.1.	Reading with Mapping Gaze				
7.2.	Text Analysis				
8.	Concepts	23			
8.1.	Concept 1				
8.2.	Concept 2				
8.3.	Concept 3				
8.4.	Concept 4				
8.5.	Concept 5				
8.6.	Final Concept - Concept 3				

1. Introduction

1.1 Khasakkinte Ithihasam

Khasakkinte Ithihasam is a novel which has fascinated the Malayali reader for more than half a century and it still continues to do so. Khasakkinte Ithihasam or Khasak, as simply called by Malayalam readers, is considered as the most important work of fiction in Malayalam literature. The novel is written by O. V. Vijayan and was published in 1969. The author's use of magical realism with no specific storyline was different from the novels familiar to the Malayali. Khasak was the first to show the Malayali reader that a novel can be the expression of one's inner experiences and not always a continuous story of external incidents [1] Throughout the novel Vijayan takes a stance that the reality is much more complex than understood by the western concepts of rationalism and science.[2] The importance of the novel is such that critics divide the Malayalam literature into pre-Khasak and post-Khasak era. [3]

The novel centers around Ravi, an educated man who absconds his modern life due to the guilt of an incestuous relationship. After wandering through different parts of the country, he finds himself at Khasak, where he sets up a single-teacher school as part of a Government program. The book narrates encounters between Ravi and Khasak; its vivid characters, both real and imaginary. The superstitions and mythical elements in the novels set a stark contrast between Ravi's rational and modern past.

Critics compare Khasak with One Hundred Years of Solitude, the magnum opus of one of the most famous proponents of magical realism, Gabriel García Márquez. The novel was written around the same time as Khasak, and the writing style and use of elements of magical realism carry certain similarities. Both the stories are set in fictional places inspired by real places and both stories talk about the occult and supernatural practices that are part of people's everyday life.[4] While Márquez's work was translated into various languages within a few years, Khasak was translated into English by the author himself after 25 years, by the name 'The Legends of Khasak'. The translated versions of the novel lack in its sensibility as a foreign language cannot capture the localized language subtleties and slang.[5]

Made famous by the writings of Gabriel Garcia Márquez, Magical realism, magic realism, or marvelous realism is a style of fiction that paints a realistic view of the modern world while also adding magical elements. [6]. Magical realists write stories from the perspective of people who live in our world and experience a different reality from the one we call objective. If there is a ghost in a story of magical realism, the ghost is not a fantasy element but a manifestation of the reality of people who believe in and have "real" experiences of ghosts. The use of magical realism in this report refers to the term used to describe the works of writers such as Gabriel Garcia Marquez and Isabel Allende and not the one used to describe the works of Frank Roh. In magical realist texts from postcolonial literature, the native knowledge and practices often coincide with the non-scientific perspective. [7]. This is true in the world of Khasak, where the stories, myths and superstitious experiences that the protagonist has at Khasak is contrasted with his rational, scientific past. According to Vijayan, the Malayali readers are living in a much more vivid and fantastical world yet getting mesmerized by the works of Latin American magical realist works.[8]



Fig. 1: O.V. Vijayan

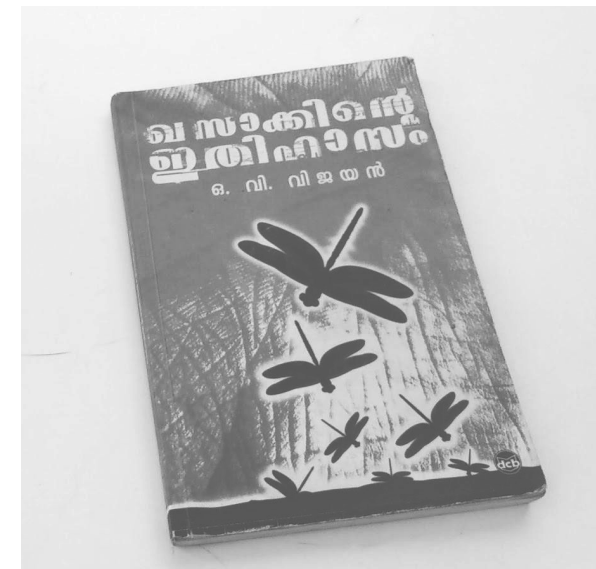


Fig. 2: Khasakkinte Ithihasam novel.

1.2 Literary Cartography

Literary cartography envisions mapping as a conceptual framework to improve our understanding of the narrative structure of a novel [9]. Visualizing and analyzing the space in literature can bring in new perspectives in understanding literature [10]. Literary cartography comes as a subdiscipline of literary geography where it assumes that a large part of fiction refers to the physical world called geospace.[11] Visualization of the novel from a spatial perspective can create opportunities for bringing in different interpretations of the text. Developments in geo-technologies and visualization techniques have opened up new opportunities to visualize and interpret literature. But most of the work that has happened is based on western literary works.

1.3 Spatial Narratives

Spatial Narratives combines various information associated with space and use them to create experiences which are often embedded in spatial representations. Both cartography and narrative are required to understand the meaning of space mentioned in literature. [12]. Spatial narratives can improve the understanding of the novel and can also lead to the pursuit of new research goals. By visualizing the space of Khasak and narrating important elements of the story from a spatial perspective will help readers to better understand the space of Khasak. This can enhance their reading experience when they next read the novel.

2. Scope

Khasakkinte Ithihasam is one of the most famous work of fiction in Malayalam literature. Various scholars have researched about the novel and rich secondary literature and interpretations of the novels already exist. We decided to focus on the space in which the novel is set because very few works have looked at the novel from such a perspective; most of the work focuses on Vijayan's writing style, themes and tone of the novel, characters, and comparison between Vijayan's work and Gabo's.

Though the novel has an English translation, but the fact that a foreign language cannot capture the subtleties of local slangs, makes the translated version fall short in its sensitivity. The design focused only on the original version of the novel and therefore the users were limited to Malayali readers.

The project tries to create a new experience of the novel to Malayali readers. Therefore the focused user group was again narrowed down to Malayali readers who have read the novel at least once. It is assumed that the users are familiar with the main characters and the plot.

3. Initial Direction

Goals:

Based on explorations and research during the initial phase of the project, the goal was to visualize Khasak, the fictional village in which the novel Khasakkinte Ithihasam is set, to give a new experience of the novel to the Malayali reader. The design shall allow users to explore and analyze the space in literature with the real geography and get a better understanding of the fictional space.

The project tries to open up opportunities to explore and interpret Khasak from a spatial perspective.

Users:

Malayali readers who have read the novel Khasakkinte Ithihasam at least once. Users are familiar with the main characters and plot.

4. Research

- 4.1. Secondary Research
- 4.2. Field Visit
- 4.3. Interview with Experts

4.1 Secondary Research

Secondary research for the project focused on understanding studies and interpretations of the novel and understanding similar projects which has visualized literary works.

4.1.1 Studies and Interpretations on Khasakkinte Ithihasam

Khasak has attracted various scholars of Malayalam literature to interpret the novel based on various themes; the magical realist elements in Khasak, socio-cultural elements in the novel, description of nature, Vijayan's political and spiritual stance and Khasak's similarities with Macondo., the fictional town in which Gabriel Garcia Marquez's 'One Hundred Years of Solitude' is set. All these have created rich secondary literature around Khasakkinte Ithihasam. The novel is also studied as part of the undergraduate Malayalam literature course in universities in Kerala.

Various artists have interpreted Khasakkinte Ithihasam using different media. Khasakkinte Ithihasam play by Deepan Sivaraman has visualized the novel using theatre techniques. The three and a half hour play was staged in different cities in India and has received a good response from the audience. Staged on an open ground surrounded by galleries on three sides and a projected screen on the fourth, the play used fragmented narration in which four different events in different time settings happens on the stage simultaneously. The director has used narrations through puppetry, video art, sculptures, dance, music, painting, and architecture to tell his interpretation of the novel.

Talks and documentaries about the novel were studied to understand the novel better. Talks given by P.K. Rajashekharan, a well known critic who focuses on O.V. Vijayan's works gave me valuable insights into Vijayan's depiction of Khasak and the inner meanings in the novel. (Fig. 4)



Fig. 3: Stills from Khasakkinte Ithihasam play by Deepan Sriraman. The play has given more focus to the characters in the novel.



Fig 4: Screen capture of a talk by P.K. Rajashekharan at Kerala Literary Fest

Khasak Padanangal is a collection of essays by various researchers on the novel Khasakkinte Ithihasam. These 16 articles discuss topics such as Vijayan's writing style, the depiction of various themes in the novel, cultural and social life of Khasak, etc. These articles helped in understanding the underlying themes represented in the novel and Vijayan's writing style.

Kerala Gov. has created a memorial for O.V. Vijayan at Thasrak village. The memorial has a collection of letters, cartoons and writings by O.V. Vijayan as well as paintings, sculptures, writings and documentaries about Khasak and O.V. Vijayan's work. The memorial functions as a centre for promoting literature and art and holds talks, seminars and workshops related to Vijayan's work as well as other works in Malayalam literature. The memorial has a collection of paintings and cartoons which are based on the novel. O.V. Vijayan memorial also has 104 sculptures depicting characters, animals, and objects which represents the fictional world of Khasak.

Ithihasathinte Ithihasam (ഇതിഹാസത്തിന്റെ ഇതിഹാസം) is a book written by O.V. Vijayan which was published in 1989. In this book, Vijayan has written about his experiences at different stages in life, including his stay at Thasrak, that had acted as an inspiration for creating the magical world of Khasak. The novel was a reply by Vijayan to critics who had accused Vijayan of copying the story from 'Bankarwadi', a novel which has a similar plot. It is in this novel that O.V. Vijayan first revealed about Thasrak village.



Fig. 5: Artistic interpretations of different scenes in the novel. These paintings are part of a series of 10 paintings created by various traditional mural painting artists at O.V. Vijayan Memorial.



Fig 6: Sculptures of different characters in the novel.

After Vijayan revealed that Khasak is inspired from Thasrak village in 1989 with his book 'The Legend of the Legend' (ഇതിഹാസത്തിന്റെ ഇതിഹാസം), various documentaries have shown the village of Thasrak and its life. Various media channels have wrongly interpreted Khasak and has portrayed Khasak as the real village Thasrak and the characters to be actual people. An example is that of Asianet News channel, which tells that a person named Pathama is the character Maimoona in the novel (Fig 8) .



Fig 7: Stills from Otta Karimpanakattu, a documentary on O.V. Vijayan by Vinod Mankara

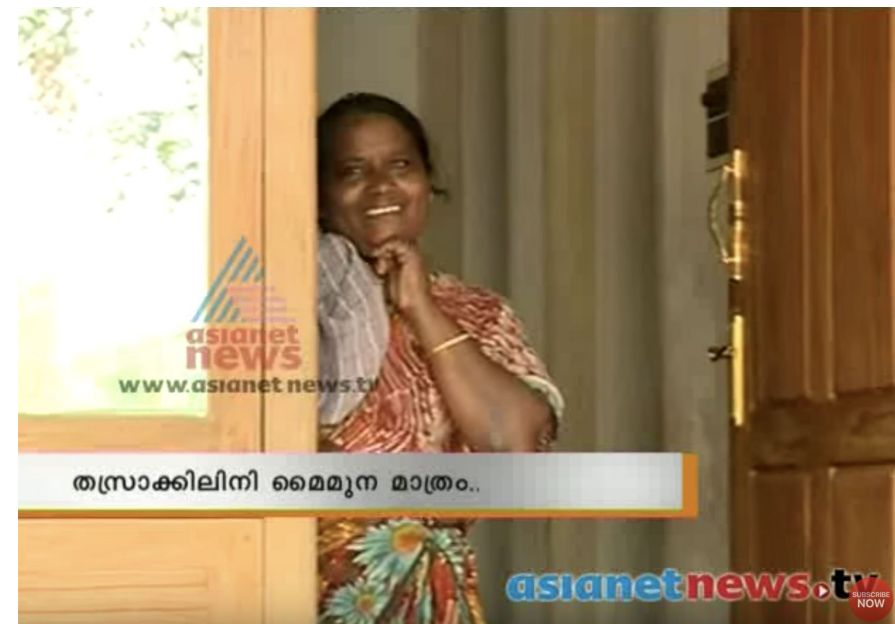


Fig 8: A still from Asianet News' coverage about Thasrak. Pathama, who is a resident of Thasrak claims that she is the character Maimoona in the novel.

4.1.2 Visualization of Space in Literature

Visualization of literary works were studied to explore the possibilities of visualizing the literary space of Khasak. Because the focus of the project was towards the space described in the novel, projects under the domain of literary cartography, spatial narratives and projects which analyzes literary works were studied.

Literary Cartography

Literary cartography envisions mapping as a conceptual framework to improve our understating of the narrative structure of a novel [13]. Literary cartography projects look at the mapping of various strategies and devices in literature. This includes analogies between the act of writing and the act of mapping, the study of maps as tools to analyze the geographies of literature and study of the role of maps in creating fantasy worlds in literature. [14] The study of maps as analytical tools brings up interesting interpretations of literature. Erdmann's work [14] on crime novels to reveal the political content of crime novels, and Habermann's and Khun's [15] use of GIS and maps to decrypt the hidden environmental message in *Lord of the Rings* demonstrates this. Caquard argues that mapping both vernacular knowledge and fiction is central to understanding places in depth. [16]

Maps have transitioned from static representations to dynamic interactive mediums where users produce and consume information via mapping practices. By adding interactivity to media, web encourages relationships between literary texts and digital maps, transmitting and shaping narrative and spatial information [17]. Mapping of the literary space in fiction to geographic elements is an important step in the process. In the mapping process, it is important to understand what elements of the literary space can and cannot be mapped. [18] Robert Stockhammer's work provides insights into what is mappable and unmappable in fiction [19]. The term mapping has to be perceived as a more malleable one, and the fictional worlds have to be approached from an exploratory view rather than a purely cartographic view. [20] This is similar to the concept of Thirdspace developed by Edward Soja [21], where spaces are made made of geographical layers and layers of stories; subjectivity and objectivity, the

abstract and the concrete, the real and the imagined, and the knowable and the unimaginable combine together to give meaning to space.

There are two major approaches taken by literary cartography projects: mapping of a single text and its spatial elements, mapping of a group of texts or aspects related to the texts. The developments in digital, interactive and animated cartography has opened up new opportunities for analysis of space in literature. Web as a platform, along with digital, interactive and animated technologies offers chances to map new themes. This also takes the practice of literary cartography towards amateurs as well as scholars. The process of the creating cartographic visualizations involves multiple steps and approaches based on the nature of the project and expected outcomes. [22]

Literary cartography projects involve two steps: gathering information about space in literature and mapping space in literature with geographical elements. Information about space in literature is collected from the literature by reading with a mapping gaze, using text mining tools or by crowd reading of the text. Different approaches have advantages based on the information which is being collected. After gathering data from the text, the mapping process will depend upon the nature of the element to be mapped. The common approaches are mapping using a mapping service (Google Maps, OpenStreetMaps Bing Maps, etc.), using GIS technologies or by using hyperlinks. By providing options for layering, comparing, micro-macro toggling and embedding media, only GIS technologies, digital, interactive and animated mapping are able to cope up with the complex meanings associated with literary space. The web allows projects to reach a larger audience, allowing them the reader to understand the space as well as takes part in the mapping process [23]. Services such as Google Maps, Bing Maps, OpenStreetMap, Mapbox, etc. makes the production of spatial narratives by making them easy to map and distribute but have limited capabilities for narration. There is a trend towards hybridization between cartography and different creative disciplines to represent both the geographical and narrative elements. [24]

Spatial Narratives

“A spatial narrative is a conceptual tool to integrate various forms of knowledge (e.g., scientific, geospatial, local, visual, and ethnographic;) around place-based experiences and interactive media. [25]”. “Narrative space refers to the space of the story world, or the spaces and places that make up the physical environment in which the characters of a narrative live and move.” [26] Piatti et al. [27] proposed five aspects which can be used to map space in fictional texts; setting, the zone of action, projected space, marker, and route. The setting is where the action in fiction takes place. Several settings combine together to form a zone of action. In projected space, characters are not present, but they are dreaming of, remembering or longing for that space. A marker is a place that is just mentioned, but not part of the categories above. Markers indicate the geographical range and horizon of a fictional space. Routes are paths along which characters move through the fictional space. Erdmann’s series of pictures, maps, and paintings which combines real and imaginary representations [28] merges the conceptual space of the map with the experiential places of the narratives.

Using maps to tell the spatial structure of fiction has to address challenges and questions around representing sequences and spatiotemporal events, visualizing micro and macro scales in fiction, conveying approximate nature as well as emotions associated with places in fiction and linking fantasy of the narrative place in fiction to Euclidean representations of maps. [29] Kathrin et al. have addressed the challenge of mapping multiple scales of different spatial settings embedded in fiction. They use a cartogram approach to visually magnify local areas where the action areas while shrinking the areas between the settings. [30]

Shreya Gupta has used virtual reality as a medium to retell *Midnight’s Children* by Salman Rushdie. A mansion was designed in VR which was a representation of the protagonist’s mind. Different artifacts mentioned in the novel was used to travel to different places in the mansion.



Fig. 9: A spatial narrative which visualizes Arya’s travel to King’s landing, from the TV series Game of Thrones.

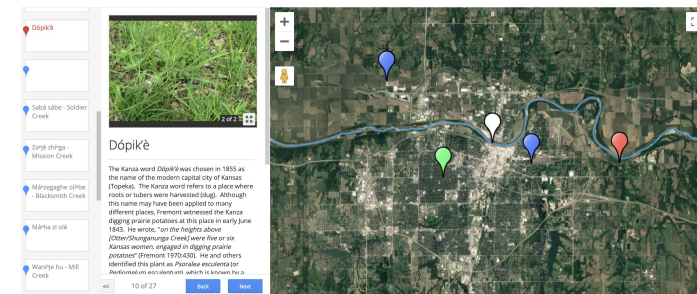


Fig. 10: A spatial narrative made using Google Tour Builder



Fig 11: A spatial narrative of Mahabalipuram made by Archaeological Survey of India, on Google Maps

Visual Analytics in Literature

Visual Analytics in Literature is defined as the science of analytical reasoning facilitated by visual interactive surfaces. [31]. There are two approaches to visual analytics in literature; closed reading and distant reading. Closed reading or microanalysis refers to close textual analysis of individual texts to unveil words, verbal images, elements of style, sentences, argument patterns, etc. It also involves concepts such as token distribution analysis and correlation analysis. Distant reading or macroanalysis involves the construction of abstract models such as tag clouds, topic modeling, heat maps, cluster maps, network diagrams, etc. [32].

Writing without words is a project by artist Stefanie Posavec in which the artist has visually represented Jack Kerouac's novel 'On The Road'. [33]

Rasagy Sharma has visualized the non-linear narrative of the movie 500 days of summer using an interactive visualization. The three stages in the relationship of the two main actors are color-coded and users can click on each bubble to see important dialogues during on the selected day. [34]

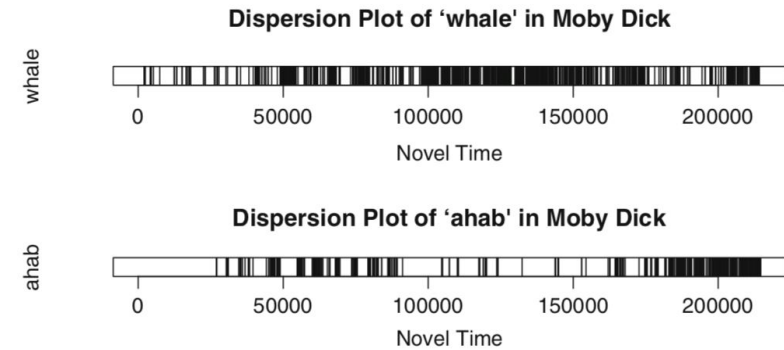


Fig. 12: Dispersion plot of Ahab and whale in the novel Moby Dick

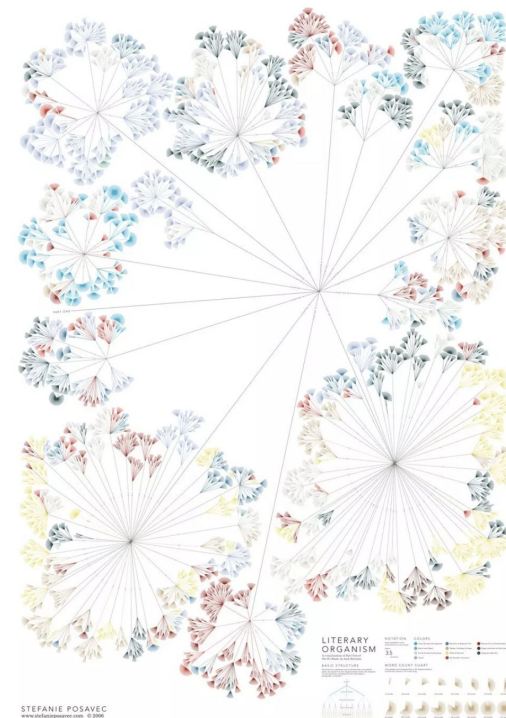


Fig 13: Writing without words by Stefanie Posavec based on the novel 'On The Road'

4.2 Field Visit

A field visit to Thasarak village in Palakkad district in Kerala was conducted on 16th May 2019. The objective of the trip was to understand the geography of the village and collect information related to the places mentioned in the novel. O.V. Vijayan Memorial at Thasarak was visited to collect information and artifacts related to the novel. Photographs were taken at important locations mentioned in the novel.

Semi-structured interviews were conducted with Murali Nair who works at O.V. Vijayan Memorial. A guided tour of the memorial was attended in which the life and works of O.V. Vijayan were explained. Murali gave information about the relation between Thasarak and Khasak. Murali also explained Vijayan's works which were created by different artists and depicted on the walls of the memorial.

Interview was conducted with Majeed who works as a security guard at O.V. Vijayan Memorial. Majeed was four years old when O.V. Vijayan stayed at Njattupura in Thasarak. Though he could not remember Vijayan's stay at Thasarak, he could remember a few characters from who the characters in the story are inspired from. Majeed gave a vivid description of Thasarak in the 1960s. Both the interviews were audio-recorded with permission and transcribed later.

Apart from semi-structured interviews, I also engaged in conversations with the villagers to understand Thasarak better. Conversations were focused on Khasak's connection with Thasarak.

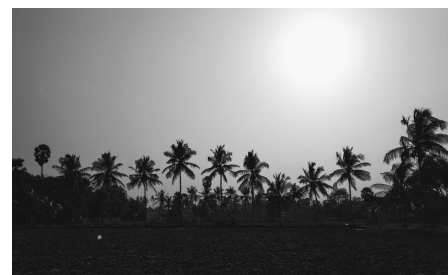


Fig. 14: Coconut trees and wild palm trees lining paddy fields in Thasarak village



Fig. 15: Thasarak Mosque, where children in Khasak attend religious classes



Fig 16: Madachankunnam Palli, the lone mosque standing inside the wild palm forests.



Fig 17: Njattupura, the building in which O.V. Vijayan stayed in Thasarak.



Fig. 18: Majeed, a resident of Thasarak village, who works as an employee at O.V. Vijayan Memorial

4.3 Interview with Experts

Semi-structured Interviews were conducted with five Malayalam Literature scholars; Dr. Krishnan Namboothiri, Dr. Achuthanunni, Mrs. Ranjini, Mr. Arun Aravind and Mr. Alamcode Leelakrishnan, who have studied and interpreted Khasakkinte Ithihasam. Interviews focused on understanding underlying themes in the novel and finding possibilities of visualization. Interviews were audio-recorded with permission and transcribed later.



Fig 19: Interview with Dr. Achuthanunni and Arun Aravind

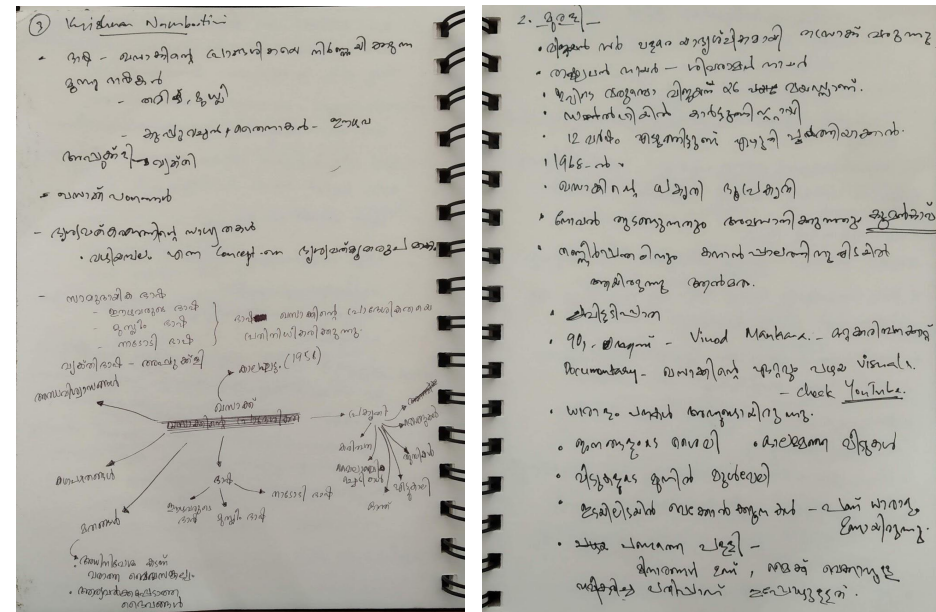


Fig 20: Notes transcribed from the audio recording of the interviews.

5. Insights

- 5.1 Themes in the novel
- 5.2 Khasak and Thasrak
- 5.3 Khasak's connection to Thasrak
- 5.4 Interpretations of the novel
- 5.5 How to represent Khasak?

5.1 Themes in the novel

It is difficult to fit Khasakkinte Ithihasam as representing one particular theme or genre. Literary scholars themselves differ in their views about Khasakkinte Ithihasam. Because of the flatness of characters, depiction of characters with minimal strokes, lack of a particular theme in the novel and the sarcastic tone it takes in depicting the different themes in the novel, M.K Menon considers Khasakkinte Ithihasam as a cartoon novel [35], whereas M. Shanmukhadas argues that the use of terms such as rebirth, karmic relationships are used with reference to the Upanishads and Indian Philosophy and that makes it a philosophical novel [36]. Asha Menon feels that throughout Khasakkinte Ithihasam, Vijayan tries to express his internal seekings for truth and the novel takes a stance that the absolute truth can only be seen as a subjective experience rather than as an objective reality. [37]. Several other critics have studied other themes in Khasak such as the economy of the village, folk religious practices in Khasak, syncretism of religions practices, depiction of death, sex, rebirth, and sickness, occult and supernatural elements in the novel, and languages and dialects in Khasak.

According to Dr. Krishnan Namboothiri, the underlying theme in the novel can be represented by four lines in Ezhuthachan's Adhyathmaramayanam. [38]

“പാമ്പർ പെരുവഴിയമ്പലംതന്നിലെ
താന്തരായ് കൂടി വിയോഗം വരുമ്പോലെ
നദ്രാമൊഴുകുന്ന കാഷ്ഠങ്ങൾപോലെയും -
മെത്രയും ചഞ്ചലമായസംഗമം ”
അദ്ധ്യുത്ഥരാമായണം, അയോധ്യകാണ്ഡം, ലക്ഷ്മണസാന്ത്വനം

The lines can be loosely translated as:

“Our life and the relationships we have with people are similar to the one that we have with people we meet in a wayfarer's Inn. The next day, we all head towards our destinations. They all move like a small twig in a flowing river, without any materialist ambitions, without any predetermined destinations.”

This concept is prevalent throughout the actions of Ravi, the protagonist, as well as with that of people of Khasak. Vijayan has used foregrounding (പുറംകേഴ്ച) technique in the novel by using character names and words which are not found in common language, usage of common terms in uncommon ways, repeated use of few words in a particular pattern, and use of words in different dialects. [39]

5.2 Khasak and Thasarak

Vijayan had stayed at Thasarak for only twenty-one days and during his stay he had observed the people at Thasarak and captured details about their life by drawing their cartoons. In the novel, Vijayan has changed the geography of Thasarak to suit his narration. He has swapped few locations and added and removed some other locations. For example, Chithali is a place in Palakkad district but it is not near Thasarak. Vijayan has added a hill named Chithalimala in Khasak. In the novel, the single teacher school is run in Njattupura, where the protagonist lives as well. Though Vijayan stayed in Njattupura, the school which his sister ran was not in Njattupura, but in a nearby building. In some cases, Vijayan has kept the geography the same as that of Thasarak. There are lot of mismatches between media's portrayal of Khasak and what Vijayan had intended in the novel. O.V. Vijayan published Ithihasathinte Ithihasam (ഇതിഹാസത്തിന്റെ ഇതിഹാസം), in which he wrote about his stay at Thasarak village and the inspirations for developing characters, the space, and life of Khasak's people. Vijayan has only taken two characters from Khasak, that too their outlines. Places mentioned in the novel has references and resemblance to Thasarak, but Vijayan has changed it to suit the novel. Some of the stories, myths, and superstitions in the novel are familiar to the people of Thasarak but not all are their stories. In an interview, Vijayan said:

“ഒരു ഗ്രാമത്തിന്റെയും കഥയല്ലത്. ഈ വില്ലേജ് ഒരു നിമിത്തമായി എന്ന് മാത്രമേ ഉള്ളൂ”

(“It is not the story of any village. This village just happened to be a coincidence”)

5.3 Khasak's connection to Thasrak

Depiction of nature in Khasak is similar to the nature one see at Thasark village. Though Vijayan has made changes, Khasak has the same animals, insects, birds, plants of Thasarak. One can see tall palm trees lining both sides of the road and a large number of dragonflies flying close to the ground. During the interview, Murali Nair told me that the place has also a large number of spiders and chameleons, both important characters in Vijayan's novel.

Like Vijayan has done with words, a similar style of foregrounding is done to represent the ecology of Khasak. The nature in Khasak is similar to that of Thasrak, but Vijayan's repeated use of wild palm trees, chameleons, dragonflies, spiders and snakes gives a distinct ancient tone to the space of Khasak. Vijayan has also borrowed stories, myths, and superstitions that he has observed at various stages in his life. Some of the stories belong to Thasrak, but some does not. One interesting example is the story of Malayapothi. According to the novel, Pulimarathile Pothi (Ghost on the Tamarind tree) stays on top of a big Tamarind tree near Chithalimala. The story is known to the people of Thasrak as a story from a nearby location, but it is not one that belongs to Thasrak.

Vijayan has subtly represented the culture of Northern Palakkad in the novel, which only someone who is familiar with the cultural practices in the region will be able to identify. For example, Ravi teaches evolution to the students this way:

Two living cells, two sisters, goes for a walk near the valley of Chithalimala. They take different paths and one becomes a little girl and another a tree. The little sister comes back to the valley to pluck a flower from the tree, not knowing that it is her elder sister.

The use of sisters and the concept of forgetting the sister after a long gap is related to beliefs around Devi temples in Northern Palakkad.

5.4 Interpretations of the novel

Most of the artistic interpretations of the novel takes medium such as painting, sculpture and photography. Artists have tried other media such as play, documentary, or TV serials which tries to use the devices of the selected medium to recreate the experience of Khasakkinte Ithihasam. The focus of the interpretations are more towards the characters and events happening in the novel. O.V. Vijayan memorial at Thasrak actively conducts workshops where artists, writers and students come together for cultural and literary discussions, seminars and workshops. Painting is the most common medium for interpretation of the novel. The walls of the memorial are full of paintings which retells events or themes in the novel from the artist's perspective.

5.5 How to represent Khasak?

Khasakkinte Ithihasam is not a fictional work on top of the real geography of Thasrak. This changed the direction of the project from connecting the novel to the real geography to creating a fictional space. This was a turnaround from the initial course of the project. It limited the options for using technologies such as GIS to embedding information to the geography to tell stories. It also limited options to use platforms provided by services such as Google Maps, Bing Maps, OpenStreetMaps, Mapbox etc. which makes it easy to use the existing geographical representations for creating stories around spaces. But, this also gave opportunities to approach visualizing the space more creatively and explore different media which can help readers understand the space of Khasak.

6. Redefined focus

Based on the findings from the research, it was clear that Khasak has to be viewed as a fictional village and Thasrak should be seen as an inspiration for visualizing the space of Khasak and not as the real geography in which the novel is set. This changed the focus of the project, from visualizing the fictional space of Khasak and mapping it to the real geography, to visualizing the fictional space of Khasak as mentioned in the novel with Thasrak serving as an inspiration.

The final goals and objectives of the project were set as:

Goals:

Create a new experience of the novel Khasakkinte Ithihasam by looking at the novel from a spatial perspective.

Objectives:

- Visualize the space of Khasak, the fictional village in which the novel Khasakkinte Ithihasam is set, to let users experience the novel from a spatial perspective
- Create an interactive spatial narrative based on the novel, which helps users understand the space of Khasak

Users

Malayali readers who have read the novel Khasakkinte Ithihasam at least once. Users are familiar with the main characters and plot.

7. Explorations

The novel was read multiple times to understand it better as well as extract information from the novel for visualizing the space of Khasak. The text was analyzed using text analysis methods to identify opportunities for visualizing the space. Some media and tools were explored to identify the potential for visualizing and options for interactivity.

7.1 Reading with Mapping Gaze

The novel was read multiple times to extract information about elements which defines the space of Khasak. These elements include human and supernatural characters, gods, plants and animals, geography, objects, language variations, religions in Khasak and their practice, magical realist elements, and other themes in the novel. The possibilities of mapping different elements to the space were explored. Some of the ideas at this stage include visualizing stories about magical realist elements in the novel to the locations at which they occur, places where different gods are placed, mapping people and their religious practices to locations, etc.

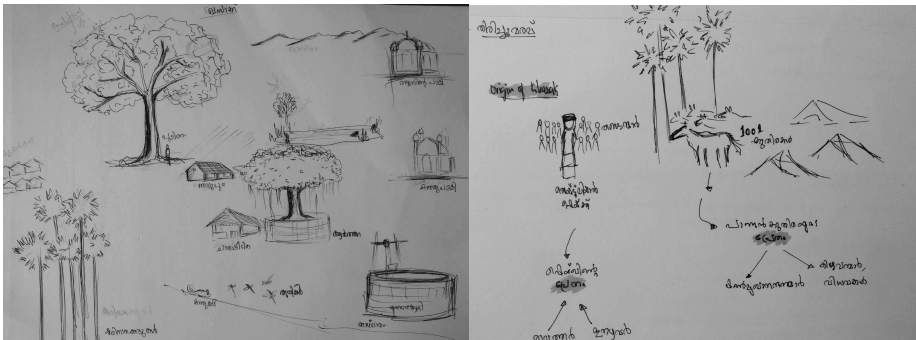
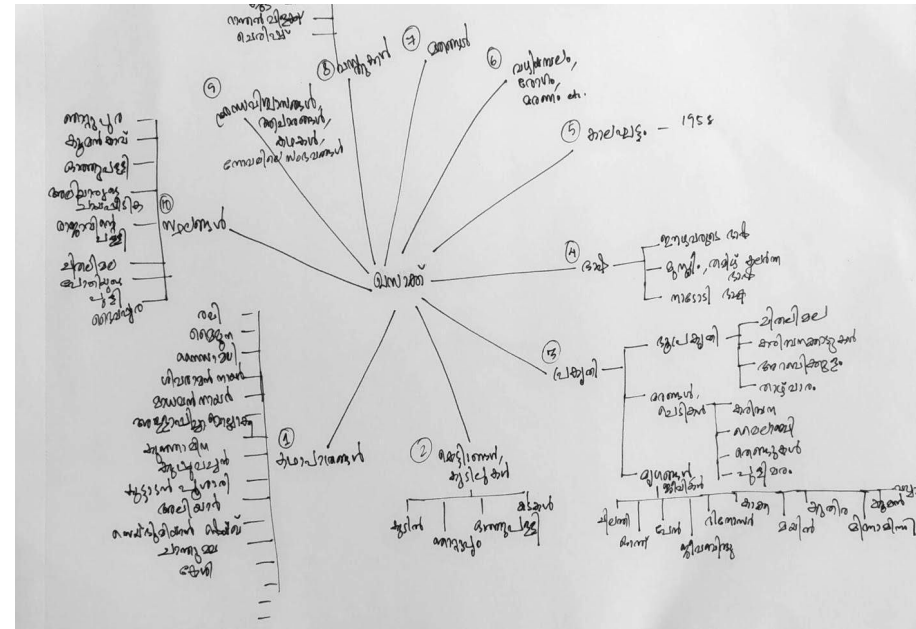


Fig. 21: Sketches made during the reading process



A	B	C	D	E	F	G	H	I
Sl. No.	കുമാരനാശി	നാമങ്ങൾ	ധാരണ, പക്ഷികൾ, മത്സ്യം	Elements of space that defines the space of Khasak	വസ്തുക്കൾ	ജാതി, മതം	ഭാഷാശാസ്ത്രം	ഭാഷ
1	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
2	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
3	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
4	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
5	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
6	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
7	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
8	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
9	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
10	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
11	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
12	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
13	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
14	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
15	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
16	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
17	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
18	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
19	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
20	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
21	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
22	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
23	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
24	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
25	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
26	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
27	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
28	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
29	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം
30	മല	കുമാരനാശി	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം	മത്സ്യം

Fig. 22: Elements that defines the space of Khasak.

7.2 Text Analysis of the Novel

Extracting the text out of the context of the literary work can give opportunities for looking at the content from an entirely different perspective. Though the text loses meaning when it is taken out to context, techniques such as macro, meso or micro analysis can provide insights into the author's writing style, relationship between different elements, changes in the themes of the novel, etc. Computational text analysis of the novel was done using R language to analyse different elements and their appearance in the novel, relationships between characters and the space in the novel etc.

Malayalam being an agglutinative language, there are lot of challenges in using text analysis methods to understand literary works. The novel uses different language styles(dialects and different variations used by different characters) which further limits the options for using computational literary analysis.

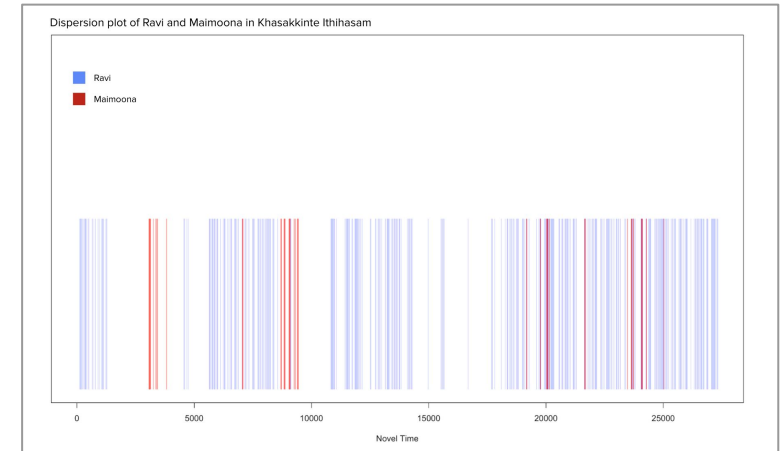


Fig. 23: Dispersion plot of two characters, Ravi and Maimoona, in the novel

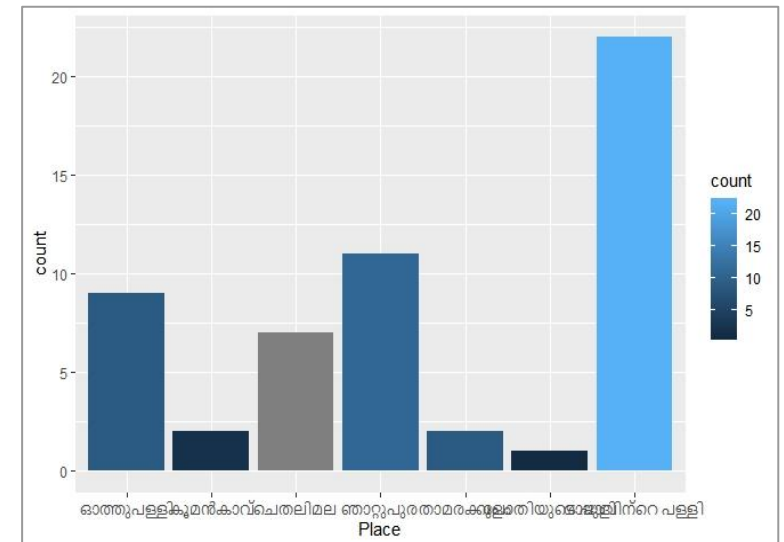


Fig. 24: Word count of different locations in the novel

7.3 Other Explorations:

To understand the potentials of different media in visualizing the space of Khasak, normal photographs as well as 360 degree photographs were captured during the field visit. A quick 360 degree prototype was created on a 360 degree authoring platform to understand how the experience would be.

Photographs of Thasrak village was captured during the visit and this has guided me in visualizing the space for the project.

My experience about the visit and my thoughts about the space of Khasak was written as a blog on a blogging platform media and it was shared with users over WhatsApp. Writing and sharing this has helped me in formalizing my thoughts as well as collect feedback from users about my views.



Fig. 25: Blog post about Khasak written on Medium.



Fig. 26: 360 photograph of Njattupura, which serves as the main building for O.V. Vijayan Memorial



Fig. 27: Screen grab of an interactive 360 degree exploration of Njattupura created on 360 degree authoring platform VeeR VR.



Fig. 28: Photographs captured during the visit to understand Thasrak village

8. Concepts

After exploring on various themes, few concepts were developed for the final design. Because the project tries to create a new experience of the already existing literary work, the concepts were explored which would align with the one or more themes in the novel. The ideation process tried to answer questions such as, 'how to represent the space of Khasak?', 'how to create experiences similar to the themes represented in the novel?', 'which tools to use?', etc.

8.1 Concept 1

An interactive map of the fictional world of Khasak

A fictional map of Khasak where users can navigate and interact with different locations in the novel to access information. The novel will be re-structured spatially and information will be layered. Users can look at different layers of information such as various themes in the novel like natural elements, magical realist elements, underlying themes in the novel, journey of characters to different locations, past and present events that define Khasak, and Khasak's culture and its connections with the culture of Northern Palakkad. Users can navigate to different locations via paths taken by the characters and interact with the information embedded at different locations.

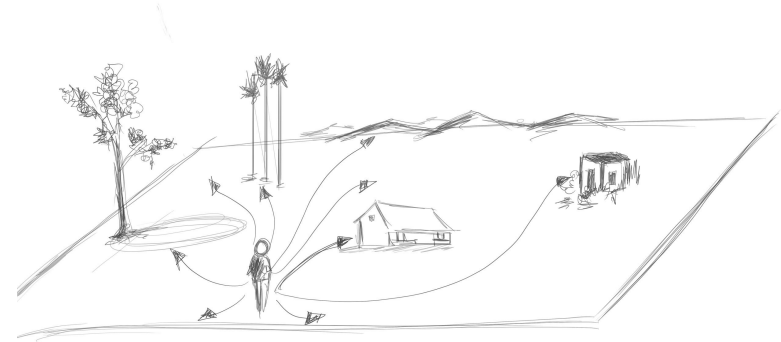


Fig. 29: Concept 1

8.2 Concept 2

A Bus tour to the magical world of Khasak

Vijayan comes to Khasak in a bus from Palakkad. The bus takes Vijayan from the outside world of rationality and scientific knowledge to a magical world full of superstitions and myths. A similar bus ride now takes the reader through the paths Ravi and other characters traveled and explore interactively with the characters, animals, birds, ghosts, and gods at these places. The guided tour starts from Koomankavu, goes through important locations in the novel and ends at the valley of Chithalimala.

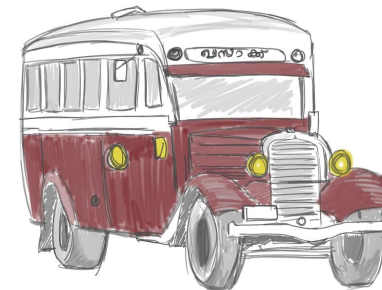


Fig. 30: Concept 2

8.3 Concept 3

An interactive spatial narrative which focuses on the ecology of Khasak.

Important locations in the novel will be visualized and users can interact with animals, plants and other non-human characters which inhabit these locations. Various settings in the village will be created as 360 degree images and users can interact with animals and plants in each of these settings.



Fig. 31: Concept 3

8.4 Concept 4

Visualizing Khasak's knowledge

Ravi goes to Khasak to teach rational and scientific knowledge to the students. But throughout the novel, Ravi learns more from the students. Vijayan has mentioned his view about creating such narration in the book *Ithihasathinte Ithihasam*. He believes that the world cannot be understood only by the scientific rational view. The idea is to use the reference from the novel to create a learning environment in different locations in Khasak, through which an outsider can learn everything about Khasak's truth.



Fig. 32: Concept 4

8.5 Concept 5

An interactive Data Visualization based on Khasak

The text which describes the space of Khasak will be extracted and analysed. Looking from an analytical point of view, the text will be extracted and both macro and micro analysis will be done to visualize various relationships in the novel. The interconnectedness of different characters and the places they go to in the novel can be analyzed to create different understandings for the novel. Vijayan's writing style has been analyzed by various scholars. Vijayan's use of certain natural elements such as Karimpana, Chameleon, Pterodactyls, Spiders, Dragonflies etc. and techniques such as foregrounding to give uniqueness to the space of Khasak.

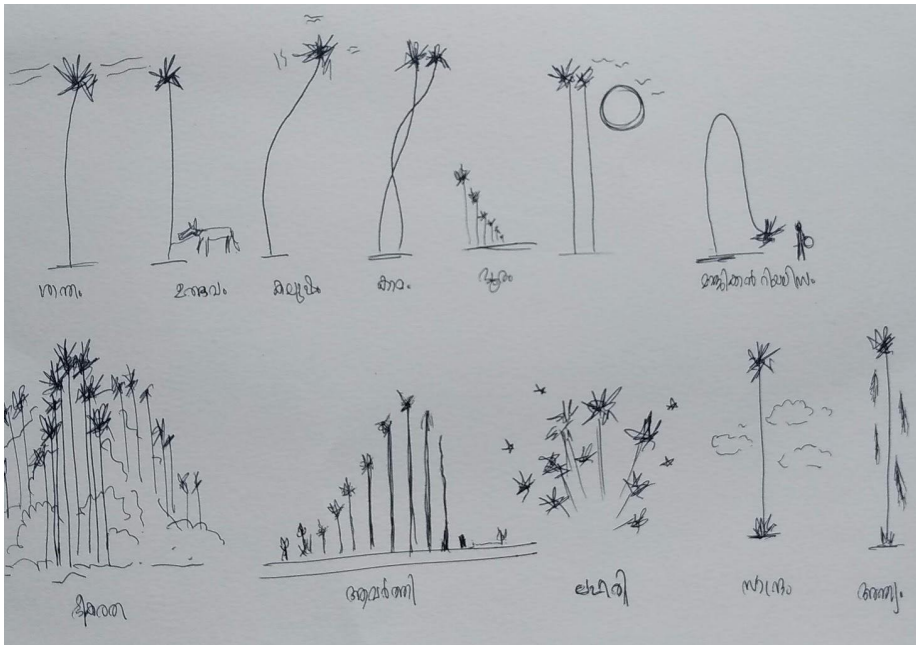


Fig.33: Visually representing Karimpana (Wild Palm tree) and the changes in its descriptions with changes in themes in the novel.

Other possible themes include:

- Characters and their association with animals and plants
- Characters and their association with different locations in the novel
- Path taken characters in the novel
- Paths taken by Ravi's mind

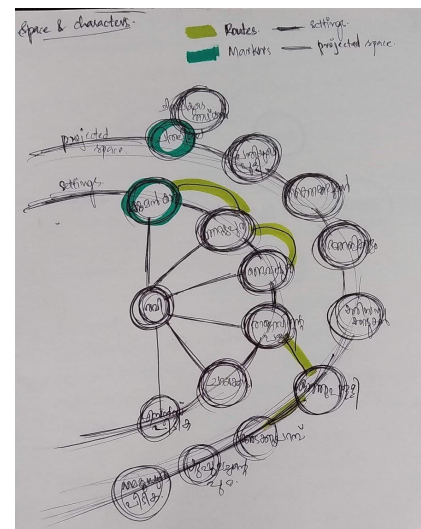


Fig.34: Ravi, the protagonist in the novel, and the locations he is connected to.

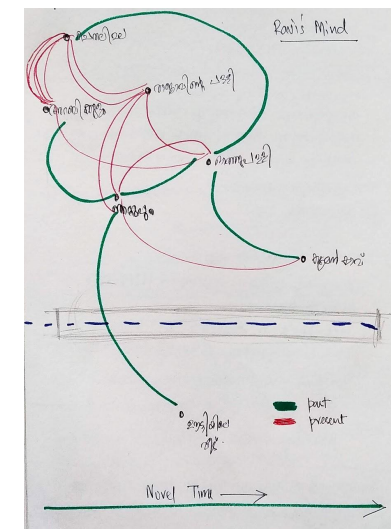


Fig.35: The locations that Ravi's mind travels to, inside and outside of Khasak.

8.6 Final Concept

An interactive spatial narrative which focuses on the ecology of Khasak

The final concept is an interactive spatial narrative which focuses on the ecology of Khasak. The narrative takes 360 degree images as the medium to represent the space of Khasak. The narrative gives focus to the living, non-human characters in the novel and restructures the text spatially. The village of Khasak will be mapped and different locations will be visualized as 360-degree illustrations. User can navigate to the different places in Khasak, where they can interact with animals to understand their life in the magical world of Khasak.

The ecology of Khasak was selected as the main focus for the narrative because of some of the insights from the field visit. *Karimpanas*, or wild palm trees, a recurring element in the novel, was once what defined the geography and culture of Thasrak. It was an integral part of the culture of Thasrak because it offered value by providing material for roofing and was the primary source of alcohol. Changes in lifestyle in these villages have reduced the dependency on *Karimpanas*. These changes have more impact on the animals that inhabit Khasak. Cutting down of wild palm trees have become common and this is affecting the geography of Khasak in a bad way.

Various options for visual representation was considered. A 360 degree illustration in virtual reality was chosen as the final medium because it would give users a perception of being in the space as well as gives enough options for creatively representing elements from the novel.

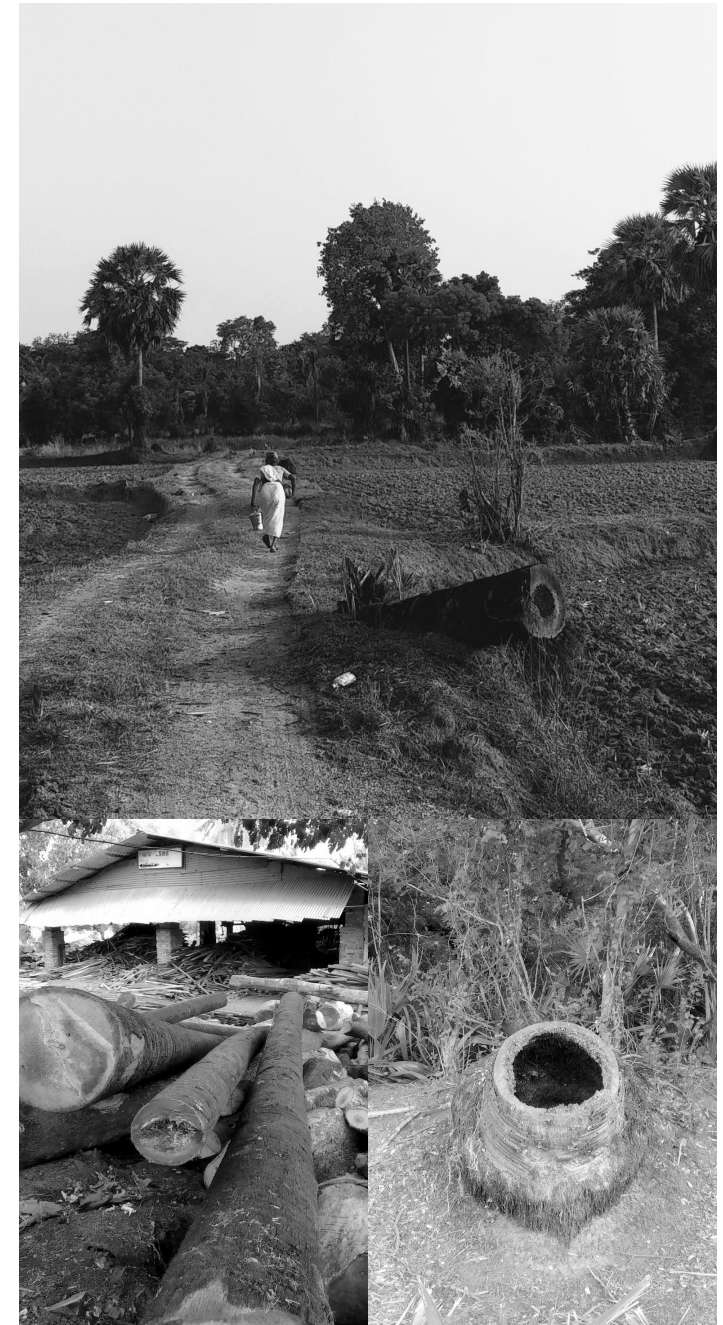


Fig. 36: Logs of wild palm trees in Thasrak village and a wood-mill in Thasrak

9. Design

- 9.1. Visualizing Khasak
- 9.2. Creating an interactive narrative
- 9.3. Designing Interactions
- 9.4. Final Design
- 9.5. Prototypes

9.1 Visualizing Khasak

The fictional geography of Khasak was visualized by combining different elements from the real geography of Thasrak and the description about Khasak in the novel. This was done so that the visuals stay connected with the novel as well as the space which inspired the novel.

Important locations in Khasak were sketched out using the visuals of the village which were captured during the field visit and understanding the environment from old documentaries about Khasak. The book, *Ithihasathinte Ithihasam* also gave references to the elements that inspired Vijayan to create the fictional space of Khasak.

A rough 2D map was then drawn based on the the data collected from the field. Further reading of the novel with the map gave more clarity about the spaces mentioned in the novel. The reading focused on the most important settings mentioned in the novel and some of the less important settings were omitted because they appeared very less in the novel.



Fig. 37: Important locations in Thasrak village 30 years ago (above) and now (below)



Fig. 38: Sketches of different settings in the novel

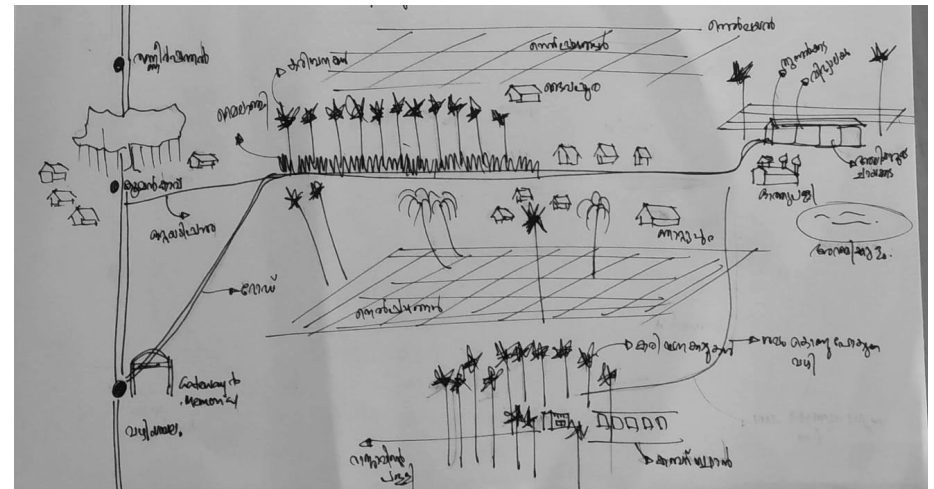


Fig. 39: A rough map of Thasrak village made during the field visit

Information about important settings as well as animals and plants were extracted from the novel. Based on these two filters, 10 settings were finalized where most of the animals and plants are present. Out of these 10 locations, *Njattupura* is further split into an outside view, view inside first room and view from the second room, and *Oathupalli*, is split into an outside view and inside view taking the total number of settings to 13.

A more detailed map was drawn after identifying spatial arrangements mentioned in the novel. Foreground elements were identified for each scene based on the information extracted from the text. These elements include animals, plants, ghosts, gods and other natural and supernatural elements.

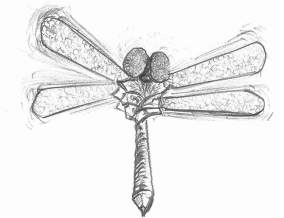
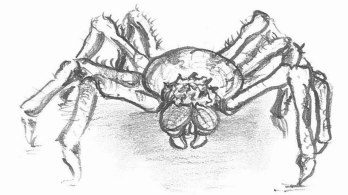
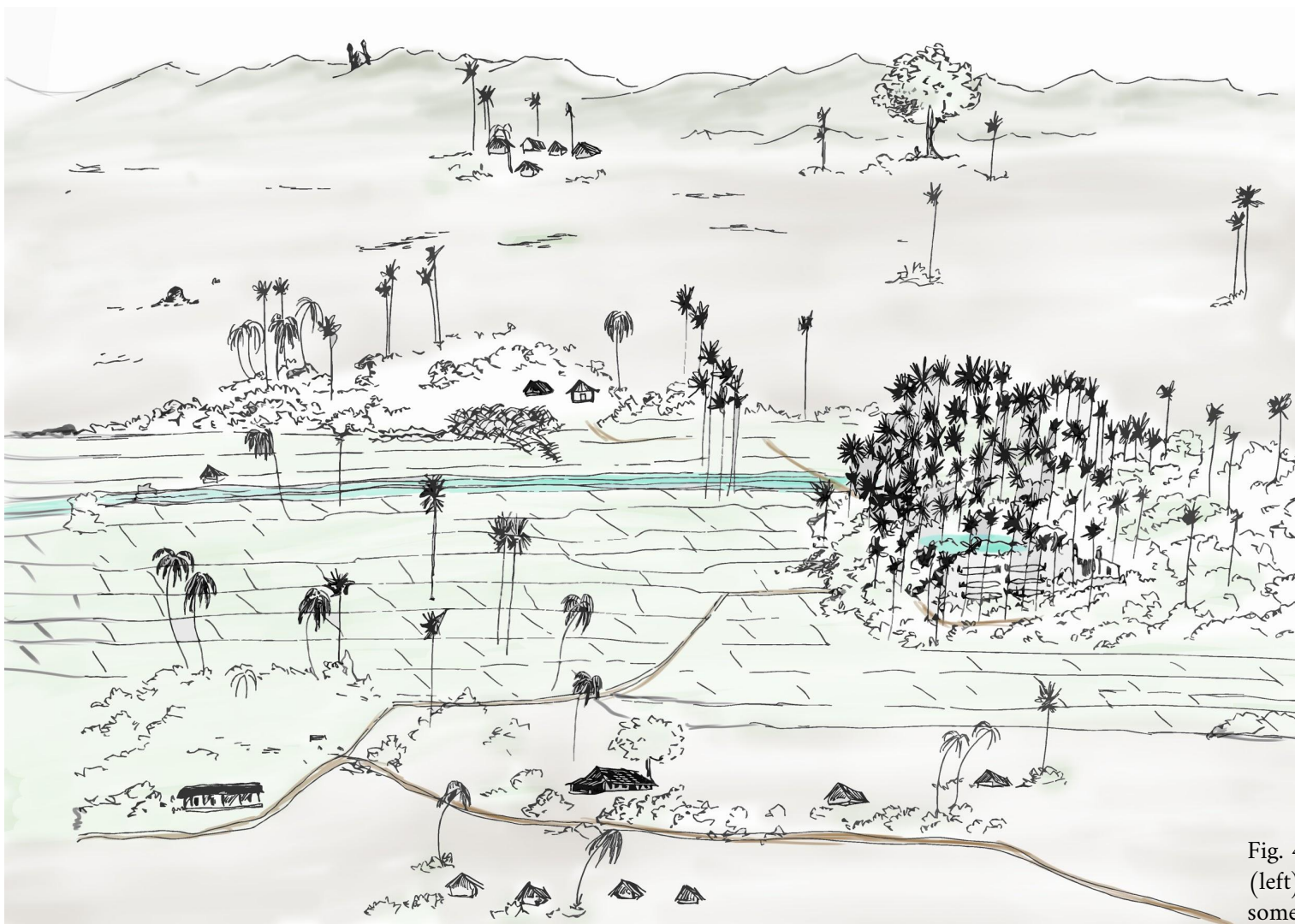


Fig. 40: 2D map of the visualized space (left). Fig 45: Foreground elements for some of the scenes (above)

A rough 3D model of Khasak village was created which contains the important settings in the novel. Using this 3D model as reference, 360 images were captured at the selected locations. This was used as reference for 360 degree sketches. As the exploration of space in a 360 world is from one single point and not by navigating through the space in 3D world, elements were placed so that they were visible from the point from which the user looks around in each scene.

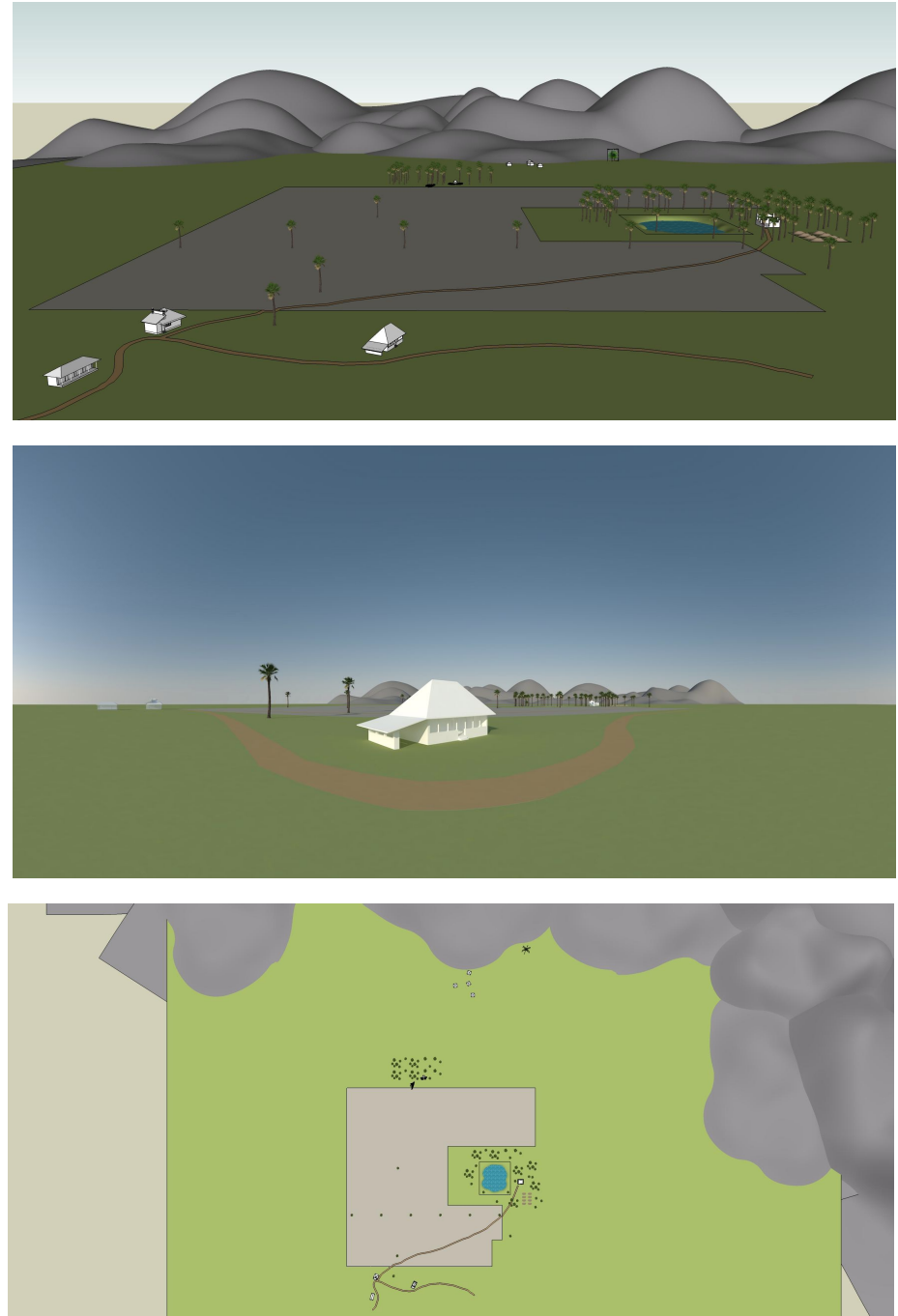


Fig. 41: Different scenes from the 3D visualization of the space

A mood board was created for inspirations for the illustrations.



9.2 Creating an Interactive Narrative

9.2.1 Placing the narrative

Chatman divides narrative into two parts: story and discourse. Story is the content, consisting of both events and existents (characters, setting, etc.). The discourse of the narrative is the expression of the story, or the means by which the content is communicated. [41]

The story part of the narrative focuses on representing the ecology of Khasak through existents; setting and non-human characters. The ecological elements are represented through their association with the settings. The discourse is achieved by narration about the settings as well as characters and change in the visual representation of settings and characters. The characters here implies the animals, plants and other non-human characters which constitutes the space of Khasak.

For understanding interactive narratives, we have followed the taxonomy provided by Gaylean' for defining interactive narratives. The taxonomy contains three components;

- Space created by interaction and narration,
- Connection of the interface with the narrative, and
- Viewer's relationship with the narrative.

In designing interactive narratives, we used the 2D space of interactivity and narrative structure defined by Gaylean, to place the interactive narrative experiences. [42]

The interactive spatial narrative aims at letting users explore Khasak to understand the space. The narrative structure was kept low as the narrative focuses on user exploring the space rather than taking user through a predefined path or plot. User's interaction with the interface changes the path taken by the user, and not the plot or end of the narrative.

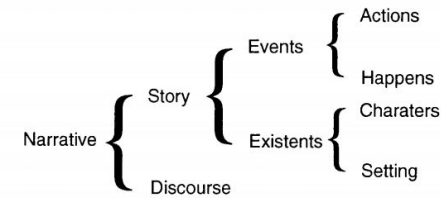


Fig. 43: Chatman's diagram of narrative elements

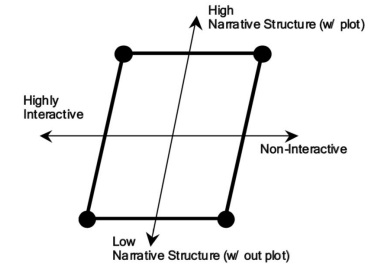


Fig. 44: Interactive narrative space of experiences, Galyean, T. A. (1995), p.81

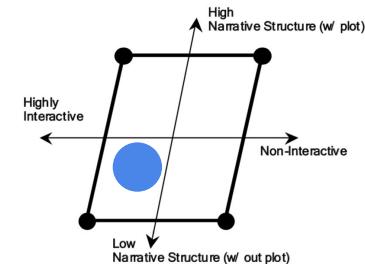


Fig. 45: Placing the interactive narrative in the Interactive narrative space of experiences

Gaylean categorizes interactive narratives into three levels based on the representation of the narratives; plot level, presentation level and viewer level.

- **Plot level:** The viewer's relationship with the narrative is decided to be set as an outsider, observing the narrative from the outside, instead of being as a character in the narrative. User takes the role of a character which is connected to Khasak, but not part of the original novel.
- **Presentation level:** The viewpoint from which the character explores the space was kept at a height, hanging disembodied, observing the narrative
- **Viewer level:** Both visual and audio are used to convey the story to the user.

Few concepts were explored for the plot of the narrative.

- **Plot 1:** An environmentalist coming to Khasak to document the nature of Khasak. The user takes the role of the environmentalist and observe the animals and plants in Khasak to understand their life and stories.
- **Plot 2:** The user lands at *Chethalimala* (where Khasak ends) and wants to find the bus that takes him out of Khasak. He explores the space and interact with the actors to reach *Koomankavu*.
- **Plot 3:** User is the grandson of Kunjamina, who was a student in Ravi's single teacher school. Kunjamina, the grandmother has passed away. He dreams about his grandmother and the stories that she has told him in his childhood, and in the dream he enters Khasak village. He tries to find a dragonflies in Khasak, so that he can talk to his grandmother.

These plots were discussed with 4 users and Plot 3 was finalized for the final narrative based on their feedback. Users commented that plot 3 has a theme which is more aligned with the experience of reading the novel



Fig. 46: Plot 1

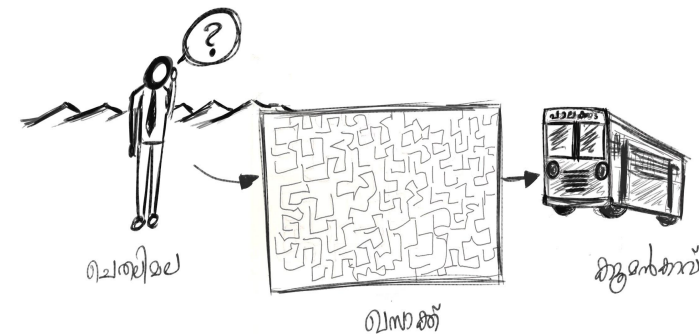


Fig. 47: Plot 2



Fig. 48: Plot 3

9.2.1 Narrative Treatment

Text

The text for the narrative was sourced from the novel and modified to suit the spatial narrative. Text that describes the settings and ecology of Khasak was extracted while reading the novel. Text about settings were used as reference to visualize the space (as mentioned earlier in section 9.1) and text about ecology was used in the narrative.

The narration in the novel majorly involves a third person point of view along with conversations between characters. The major part of the narrative style is from the perspective of Ravi, the protagonist. For the interactive narrative, I have used a third person point of view throughout the narrative. Text which is part of conversations between people is converted to a third person narrative to maintain consistency in the narrative style but, beauty that Vijayan has achieved by using different dialects is lost in this case. The interactive narrative focuses more on the space and less on the characters in the novel, therefore the dialects used by people were given less priority while choosing the narrative style.

Audio

Background music is added to each scene based on the theme. Audio associated with each interactive element was recorded. The voice for the audio was given by Roopesh, a research scholar at IIT Bombay. Spatial audio for interactive components were given to bring user's attention towards interactive elements which they may miss while looking around in the scene.

Scene_Number	Scene_Name	Frame	Interactive Element	Text extracted from novel	Point of view	Converted text
1	Njattupura_outside	Front	Njattupura	തേവാരത്തു ശിവരാമൻനായരുടെ ചെറിയൊരു ഞാറ്റുപുരയിലായിരുന്നു ഏകാദ്ധ്യാപകവിദ്യാലയം	Third person	തേവാരത്തു ശിവരാമൻനായരുടെ ചെറിയൊരു ഞാറ്റുപുരയിലായിരുന്നു ഏകാദ്ധ്യാപകവിദ്യാലയം
		Right	NA			
				ഓന്തുകൾ മനുഷ്യന്റേ ചോരയ്ക്കുന്നവരാണ്. കുടിയിടങ്ങളൊന്നില്ല. നോക്കിയാൽ മതി. നോക്കിനോക്കി കാറ്റിലൂടെ വലിച്ചെടുത്ത കുമ്പുതി നൃണങ്ങളെക്കൂമ്പോഴാണ് ഓന്തു തലയാട്ടുക.	Third person	ഓന്തുകൾ മനുഷ്യന്റേ ചോരയ്ക്കുന്നവരാണ്. കുടിയിടങ്ങളൊന്നില്ല. നോക്കിയാൽ മതി. നോക്കിനോക്കി കാറ്റിലൂടെ വലിച്ചെടുത്ത കുമ്പുതി നൃണങ്ങളെക്കൂമ്പോഴാണ് ഓന്തു തലയാട്ടുക.
		Back	Chameleon			
		Left	Oathupalli	വിട്ടിലെയ്ക്കുള്ള നീണ്ട ചവിട്ടിപ്പാത ഞാറ്റുപുരയും താഴെയാണ് കടന്നത്. പള്ളിയുടെ പടിയിൽ മൊല്ലാക്ക വിന്യസിച്ചിരിക്കുന്നു.	Third person (But the narration is from Oathupalli)	അള്ളുപ്പാറ്റാമൊല്ലാക്ക ഖസാക്കിലെ കുട്ടികൾക്ക് വേൾ ഓതി കൊടുത്ത ഓത്തുപള്ളി. പള്ളിയിൽ നിന്നുള്ള ചവിട്ടിപ്പാത ഞാറ്റുപുരയുടെ മുന്നിലൂടെ ആണ് കടന്നു പോയത്.
		Top	Crows	കാക്കകൾ ഒറ്റൊറ്റാധാർക്കുള്ളിലൂടെ വെയിലിൻറെ സ്പർശകകമാനത്തിലേയ്ക്കു നിലവിളിച്ചു പൊങ്ങി.		കാക്കകൾ ഒറ്റൊറ്റാധാർക്കുള്ളിലൂടെ വെയിലിൻറെ സ്പർശകകമാനത്തിലേയ്ക്കു നിലവിളിച്ചു പൊങ്ങി.
		Bottom	NA		Third person	

Fig. 49: Text from the novel and the text used for the narrative for scene 1.

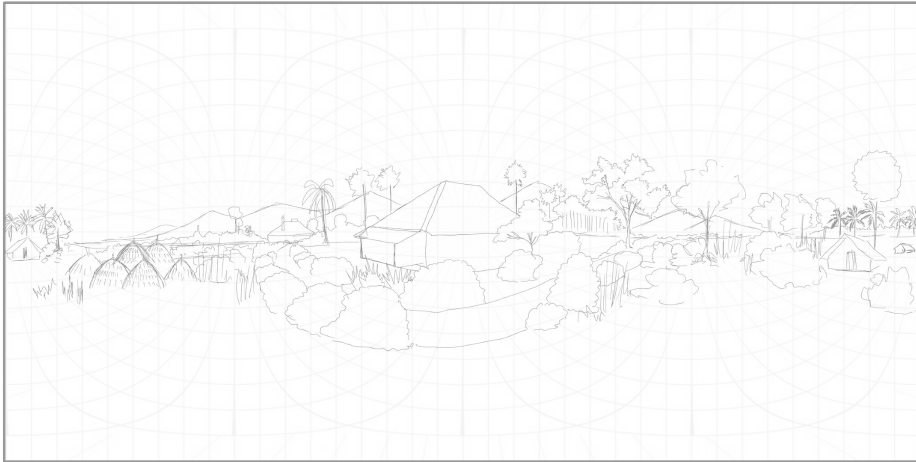


Fig. 50: Pencil sketches drawn on an equirectangular grid

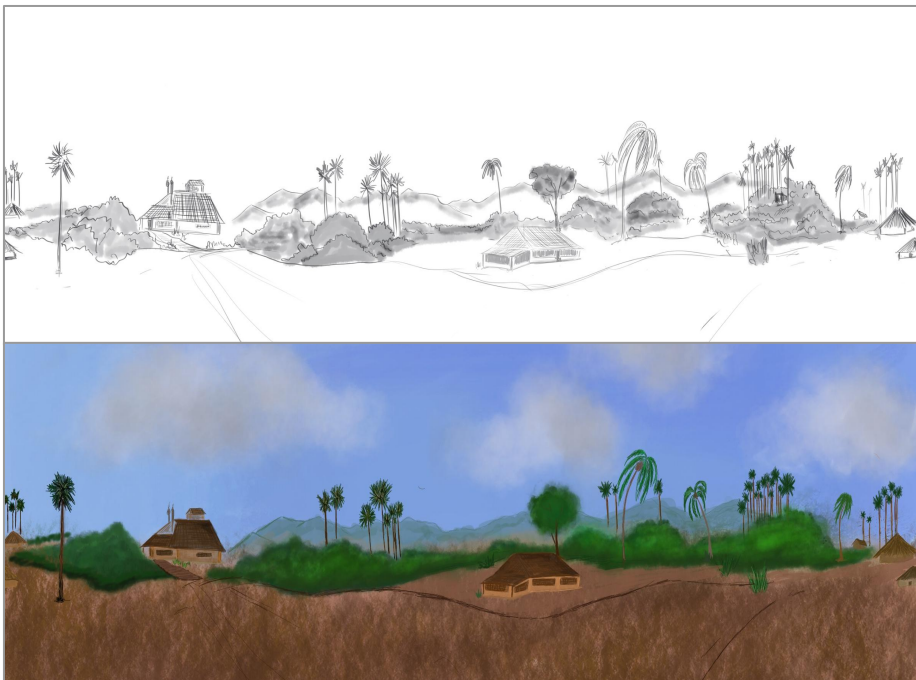


Fig. 51: Visual explorations for the background scenes

Visuals

Various options were considered before finalizing the style. Ink paintings were used for the background and pencil sketches with digital retouching were used for the foreground elements.

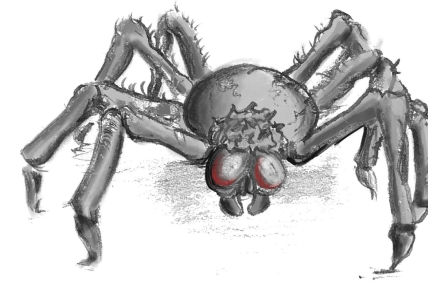


Fig. 52: Final style: Pencil and digital media was used for foreground elements



Fig. 53: Final style: Ink painting was used for the backgrounds

9.3 Designing interactions

In interactive narratives, the design of narration is considered the most important component and the interaction should be designed keeping the narrative in focus. [43]. Interactivity should be designed without affecting the narrative experience. Too many options for interactivity can make the narrative flat and therefore can affect the narrative experience.

The interactions for the narrative was therefore designed to meet the basic requirements for the user to explore the space and interact with the elements in each scene. The usability testing of the initial prototype will be used to fine tune the balance of interactivity and narrative experience. Minimal requirements needed to interact with the space were identified and the user interactions were decided based on the requirements for exploring a 360 degree image in virtual reality.

Requirements	User Interactions
Explore the space in 360 degree	Looking around
Focus user's attention towards interactive elements	Spatial audio from the direction at which the interactive element is present
Let users identify interactive elements	Highlight the color of interactive element when user is looking at the element
Let users listen to audio narration associated with interactive elements	Providing an icon which is related to listening. User can gaze for few seconds to select the icon and listen to the narration.
Let users know which interactive elements take them to next scenes	Providing icons for navigating to next scene. Users can gaze for few seconds to select the icon and move towards the next scene.

Table 1: User requirements and user interactions

9.4 Final Design

Plot

The user is recollecting memories of his recently deceased Grandmother and the stories she had told him/her about Khasak when he/she was a small child. The Grandmother, Kunjamina, is a character from the novel, who was a student in the single-teacher school. Though the user was staying away from his/her grandmother in a busy hectic life, the news about her death takes the user into a deep emotional state, where he/she reminisces about his/her childhood memories and longs to be with his/her grandmother as a small child. The narrative starts with the user slipping into a dream in which he/she reaches Khasak and wants to speak with the soul of his/her Grandmother, through the dragonflies in Khasak. The user explores the geography of Khasak and interacts with the characters in Khasak while searching for dragonflies. The narrative ends when the user finds dragonflies and he/she talks to his grandmother, through the dragonfly.

Dragonflies carry human spirits in Khasak and it is assumed that the users remember this from the novel.

Introduction

The narrative begins with an non-interactive introduction video. The user is sitting in the balcony of his flat and watching the high rise buildings in front of the him/her. Narration in the background explains the plot to the user and through it, user understands the basic premise of the narrative. User is told that the intention of the character is to explore and find the dragonflies, so that he/she can talk to his/her grandmother. The user is also made aware that he/she has to interact with all the elements in one scene to move to the next one.

Beginning Scene

User enters the first scene, the one in which user is in front of *Njattupura*, and interacts with the elements in the scene.

Navigation

User can navigate to the next scenes only after interacting with all the elements in one scene. The dragonfly will appear only if the user has explored the whole space of Khasak, and interacted with all the elements.

Interactivity

Users interaction with the interface does not change the plot of the narrative, but the space in which the user finds the dragonfly changes according to the path taken by the user.

End

User finds the dragonfly. User is asked to close his/her eyes and then listen to what his/her grandmother has to tell him/her.

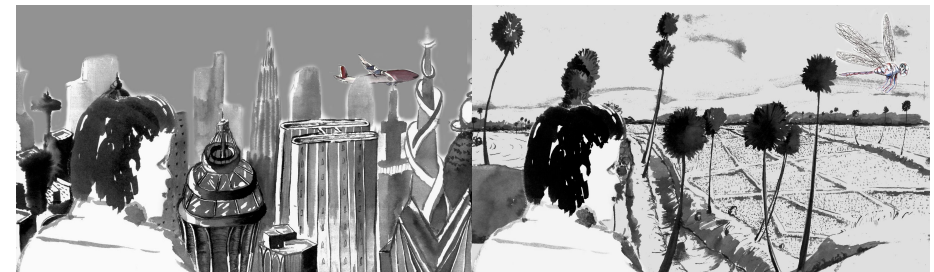


Fig. 54: Frames from the video introduction which explains the plot and intentions to the user

User Flow Diagram

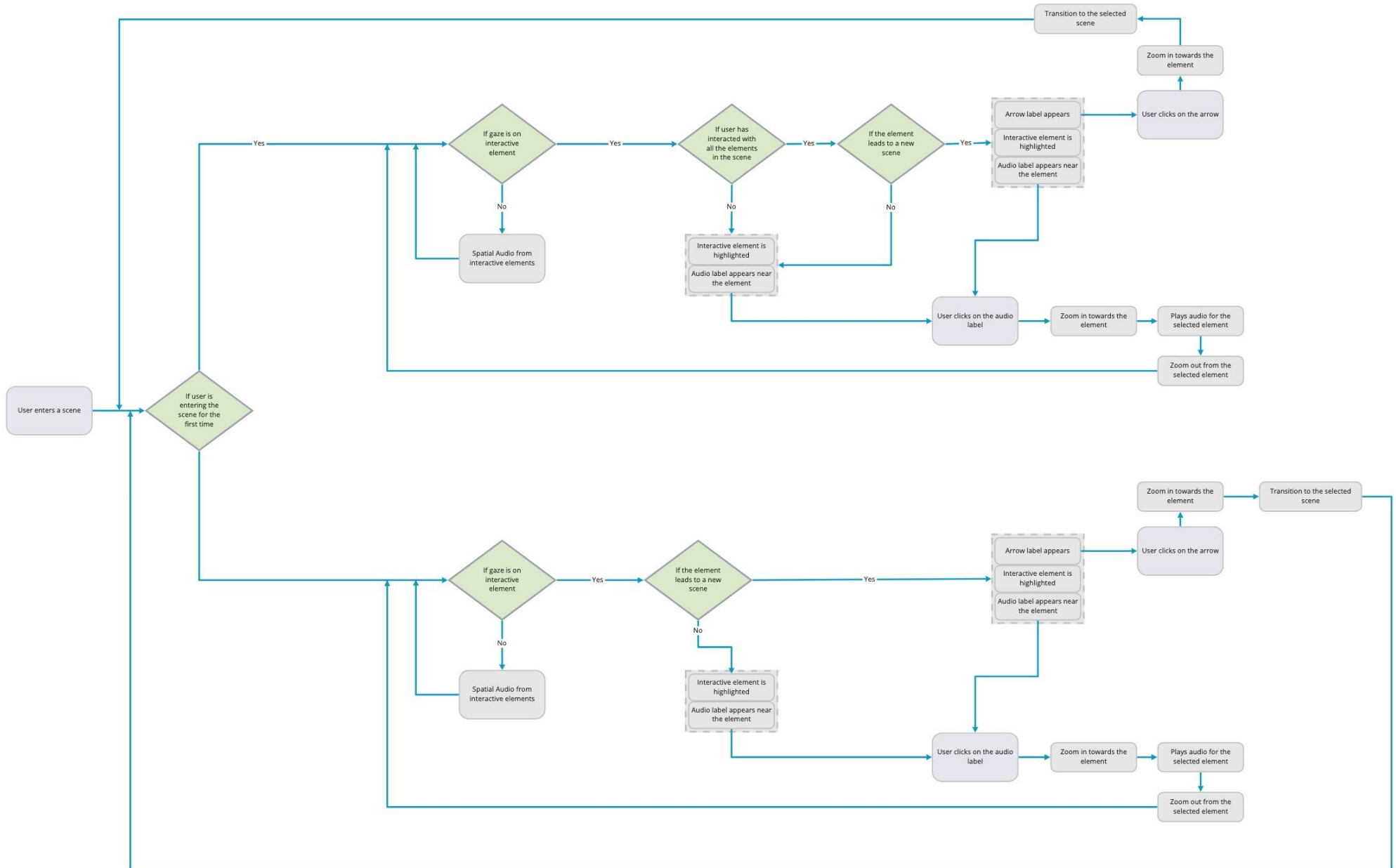


Fig. 58: User Flow Diagram for a scene

Interactive elements in a scene

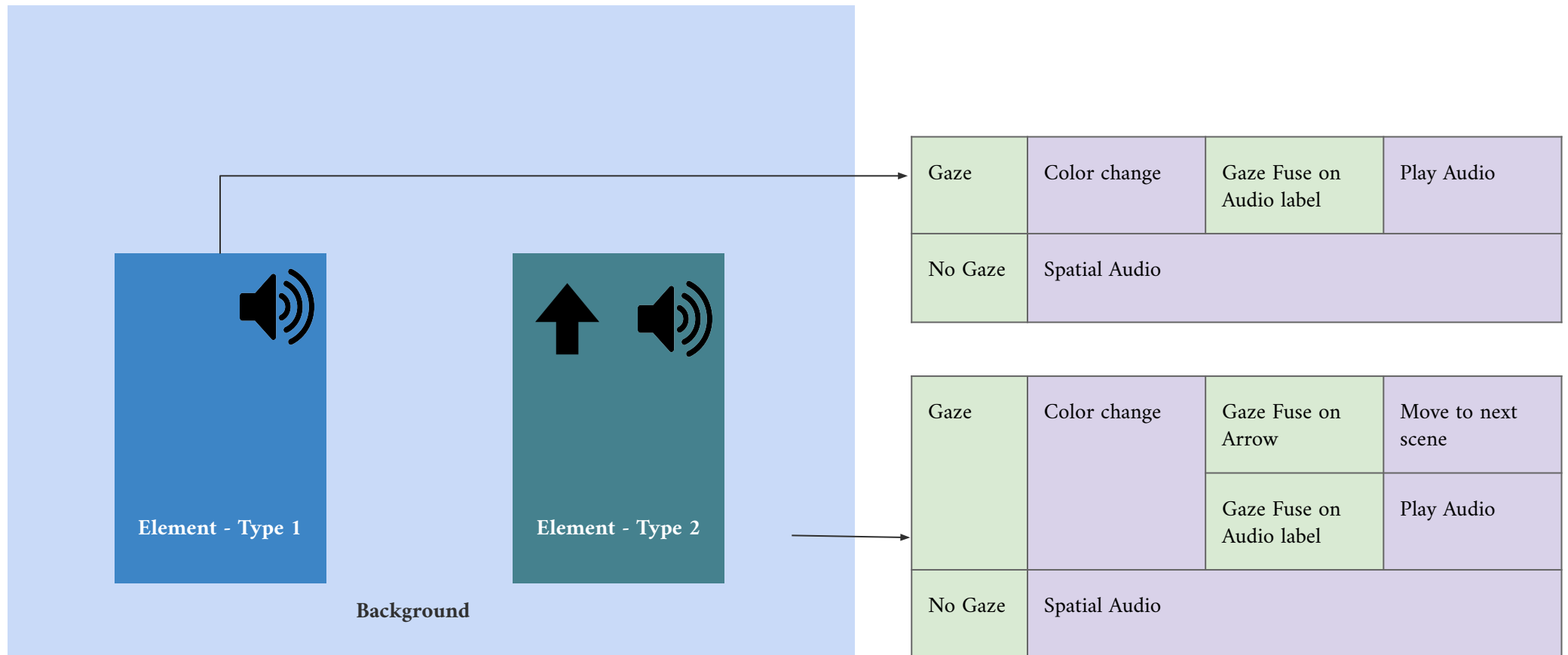


Fig. 55: User Flow Diagram for a scene

Spatial Structure of the Narrative

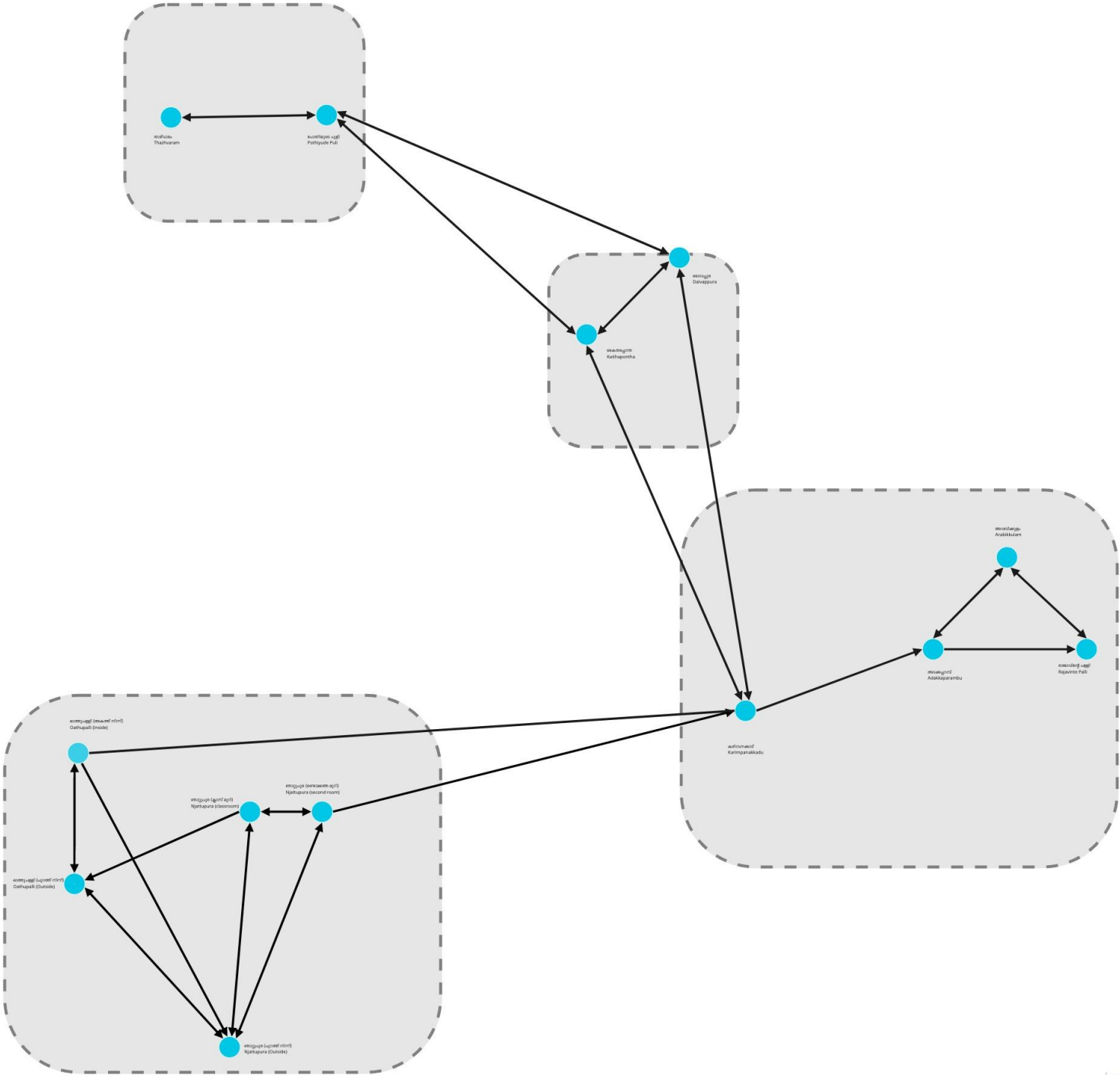


Fig. 56: Spatial structure of the narrative for 13 scenes

Designing the Experience

Designing interactive narratives involves not just the design and production of the narrative, but also designing for the situation in which the user experiences the narratives. Designers can improve the user experience by increasing the alignment of what the virtual reality experience provides with that which the user is likely to believe. [44] In creating good virtual reality experiences, high fidelity is not required to induce a deep sense of realism and believability. This is critical in designing virtual reality experiences in which realistic renderings and limited sensory experiences are present.

For the experience of the interactive spatial narrative, two components were designed for achieving experiential fidelity.

- A synopsis of the narrative experience to intrigue user about the narrative experience
- A poster which prime users towards the visuals of the narrative

Synopsis:

ഖസാക്കിലൂടെ:

ഖസാക്കിലെ തുമ്പികൾ മരിച്ചവരുടെ സ്മൃതികളാണ്. തുമ്പികളെത്തേടി ഖസാക്കിലൂടെ ഒരു യാത്ര.

Khasakkilooode:

Dragonflies in Khasak carry human souls. An interactive journey through Khasak to find the dragonflies.

9.6 Prototypes

An initial rough prototype was created to evaluate the usability of the design. Based on the feedback from the users, **Prototype 1** - a fully functional prototype for three scenes was created with final renders of the backgrounds and interactive elements, background sounds, recorded audio and spatial audio. Prototype 1 will be evaluated with users for the usability and narrative experience. Prototype 1 is scalable to all the thirteen scenes, but creating a fully functional narrative experience for all the combinations of paths that the user would take will require more time. Prototype 1 was developed using A-frame, a web framework for creating virtual reality experiences.

Prototype 2, which visualizes all the thirteen scenes in the novel was created with a 360 degree media authoring tool Veer VR. The prototype would include basic interactions such as navigating to different scenes and playing audio files associated with elements. This prototype would be evaluated for the navigation between scenes and users understanding of the space, after the experience.



Fig. 57: Screen grab from first scene in Prototype 1

10. Evaluation Plan

A toolkit for evaluating user experiences in interactive storytelling [45] and a more specific toolkit, which focuses on experiences in the virtual world [46] were referred and the dimensions in these toolkits were used to create a questionnaire specific to the experience of the interactive spatial narrative. The first toolkit categorizes the evaluation into three; preconditions for meaningful user experiences, common and frequent experiential qualities and experience measures adaptable to specific systems.

A heuristic evaluation will be done with users to understand the usability issues with Prototype 1. Both Prototype 1 and Prototype 2 will be used to evaluate the narrative experience, navigation between scenes and user's understanding of the space after using the prototype. A questionnaire will be prepared based on the objectives of the design, by referring to the two toolkits, to evaluate user experiences in interactive narratives. Users will also be asked open ended questions about the narrative experience.

Users: People who have read the novel at least once

Number of users: 12

Age: 15+

The results from the evaluation will be analysed and will inform the final design.

11. Conclusions

In this project, we tried to visualize Khasak, the fictional village in which the novel Khasakkinte Ithihasam is set and created an interactive spatial narrative based on the ecology of Khasak, to create a new experience of the novel to the reader. The space visualized combines the space mentioned in the literature as well as the inspirations for the fictional space, a approach which we have used to create a deeper understanding of the space by collecting information from varied sources. The interactive spatial narrative was designed for 360 degree illustrations as a medium, to be used as a virtual reality experience. The prototype will be evaluated with users for its usability and the narrative experience of the design. The results from the evaluation will inform the final design.

13. References

13.1 Books used in the project

- Khasakkinte Ithihasam by O.V. Vijayan
- Khasak Padanangal, by several authors
- Ithihasathinte Ithihasam by O.V. Vijayan

13.2 Publications

1. Retrieved from http://shodhganga.inflibnet.ac.in/bitstream/10603/131317/9/09_chapter%204.pdf
2. Retrieved from http://shodhganga.inflibnet.ac.in/bitstream/10603/131317/9/09_chapter%204.pdf
3. Bhasthi, D. (2019. Feb. 15. Never Leaving Khasak. Retrieved from: <https://www.thehindubusinessline.com/blink/takeaway/never-leaving-khasak/article26278839.ece>
4. Narayanan, S. (2018. June, 12). Kerala's Magical Realist and political commentator; why everyone should read O.V. Vijayan. Retrieved from: <https://www.thenewsminute.com/article/kerala-s-magic-realist-and-political-commentator-why-everyone-should-read-ov-vijayan-82895>
5. Jose, N.J. (2018. Aug. 25). Legends of Khasak. Retrieved from: <https://www.merakipost.com/2018/08/legends-of-khasak/>
6. https://en.wikipedia.org/wiki/Magic_realism
7. <http://cafeirreal.alicewhittenburg.com/review4c.htm>
8. Ithihasathinte Ithihasam, O.V. Vijayan
9. Moretti, F. (1999). Atlas of the European novel, 1800-1900. Verso.
10. Luchetta, S. (2017). Exploring the literary map: An analytical review of online literary mapping projects. *Geography Compass*, 11(1), e12303.
11. Piatti, B., & Hurni, L. (2011). Cartographies of fictional worlds. *Cartographic Journal*, 48(4), 218-223.
12. Caquard, S. (2011). Cartographies of fictional worlds: Conclusive remarks. *The Cartographic Journal*, 48(4), 224-225.
13. Moretti, F. (1999). Atlas of the European novel, 1800-1900. Verso.
14. Luchetta, S. (2017). Exploring the literary map: An analytical review of online literary mapping projects. *Geography Compass*, 11(1), e12303.
15. Habermann, I., & Kuhn, N. (2011). Sustainable Fictions–Geographical, Literary and Cultural Intersections in JRR Tolkien's *The Lord of the Rings*. *The Cartographic Journal*, 48(4), 263-273.
16. Caquard, S. (2011). Cartographies of fictional worlds: Conclusive remarks. *The Cartographic Journal*, 48(4), 224-225.
17. Ryan, M. L. (2015). Narration in various media. *Handbook of narratology*, 1, 468-488.
18. Piatti, B., & Hurni, L. (2011). Cartographies of fictional worlds. *Cartographic Journal*, 48(4), 218-223.
19. Stockhammer, R. (2013). Exokeanisms: the (un) mappability of literature. *Primerjalna Knjizevnost*, 36(2), 123.
20. Cooper, D., & Priestnall, G. (2011). The processual intertextuality of literary cartographies: Critical and digital practices. *The Cartographic Journal*, 48(4), 250-262.
21. Soja, E. W., & Chouinard, V. (1999). Thirdspace: journeys to Los Angeles & other real & imagined places. *Canadian Geographer*, 43(2), 209.
22. Piatti, B., & Hurni, L. (2011). Cartographies of fictional worlds. *Cartographic Journal*, 48(4), 218-223.
23. Luchetta, S. (2017). Exploring the literary map: An analytical review of online literary mapping projects. *Geography Compass*, 11(1), e12303.
24. Caquard, S. (2013). Cartography I: Mapping narrative cartography. *Progress in Human Geography*, 37(1), 135-144.
25. Silbernagel, J., Host, G., Hagley, C., Hart, D., Axler, R., Fortner, R., ... & Danz, N. (2015). Linking place-based science to people through spatial narratives of coastal stewardship. *Journal of coastal conservation*, 19(2), 181-198.

26. Brasher, J. P. (2017). Narrating Space/Spatializing Narrative: Where Narrative Theory and Geography Meet.
27. Piatti, B., Bär, H. R., Reuschel, A. K., Hurni, L., & Cartwright, W. (2009). Mapping literature: Towards a geography of fiction. In *Cartography and art* (pp. 1-16). Springer, Berlin, Heidelberg.
28. Erdmann, E. (2011). Topographical fiction: A world map of international crime fiction. *The Cartographic Journal*, 48(4), 274-284.
29. Caquard, S., & Cartwright, W. (2014). Narrative cartography: From mapping stories to the narrative of maps and mapping.
30. Weber Reuschel, A. K., Piatti, B., & Hurni, L. (2014). Data-driven expansion of dense regions—A cartographic approach in literary geography. *The Cartographic Journal*, 51(2), 123-140.
31. Cook, K. A., & Thomas, J. J. (2005). Illuminating the path: The research and development agenda for visual analytics (No. PNNL-SA-45230). Pacific Northwest National Lab.(PNNL), Richland, WA (United States).
32. Jockers, M. L. (2014). *Text analysis with R for students of literature*. New York: Springer.
33. <http://www.stefanieposavec.com/writing-without-words>
34. <http://rasagy.in/blog/2013/09/visualizing-500-days-of-summer/>
35. M. K. Menon, *Khasak Studies*
36. M. Shanmukhadas, *Khasak Studies*
37. Asha Menon, *Khasak Studies*
38. M. Krishnanan Namboothiri, *Khasak Studies*
39. M. Krishnanan Namboothiri, *Khasak Studies*
40. Chatman, S. (1978). 1978Story and discourse narrative structure in fiction and film.
41. [Galyean, T. A. (1995). Narrative guidance of interactivity (Doctoral dissertation, Massachusetts Institute of Technology).]
42. [Skov, M. B. (2002). Design of interactive narratives: concepts, methods, and architectures. Department of Computer Science, The Faculty of Engineering and Science, Aalborg University.]
43. Lindeman, R. W., & Beckhaus, S. (2009, November). Crafting memorable VR experiences using experiential fidelity. In *Proceedings of the 16th ACM Symposium on Virtual Reality Software and Technology* (pp. 187-190). ACM.
44. Vermeulen, I. E., Roth, C., Vorderer, P., & Klimmt, C. (2010, November). Measuring user responses to interactive stories: Towards a standardized assessment tool. In *Joint International Conference on Interactive Digital Storytelling* (pp. 38-43). Springer, Berlin, Heidelberg.
45. Roth, C., & Koenitz, H. (2016, October). Evaluating the user experience of interactive digital narrative. In *Proceedings of the 1st International Workshop on Multimedia Alternate Realities* (pp. 31-36). ACM.

13.3 List of Images and Sources

1. Fig. 3: Stills from Khasakkinte Ithihasam play by Deepan Sriraman. The play has given more focus to the characters in the novel.
Image source: Multiple websites:
 - <http://jaipurexplore.com/multifarious/je-juncture/khasakkinte-ithihasam-legends-khasak-deepan-sivaraman-theatre/>
 - <https://indianexpress.com/article/lifestyle/art-and-culture/it-takes-a-village-2756713/>
 - <https://www.thehindu.com/news/cities/kozhikode/khasakkinte-ithihasam-to-come-alive-on-stage/article8632449.ece>
2. Fig 4: Screen capture of a talk by P.K. Rajashekharan at Kerala Literary Fest. Source:
<https://www.youtube.com/watch?v=BiNV0fCz-NI&t=144s>
3. Fig 7: Stills from Otta Karimpanakattu, a documentary on O.V. Vijayan by Vinod Mankara. Source:
<https://www.youtube.com/watch?v=H2ZmsmYLBZM&t=400s>
4. Fig 8: A still from Asianet News' coverage about Thasrak. Pathama, who is a resident of Thasrak claims that she is the character Maimoona in the novel. Source:
<https://www.youtube.com/watch?v=vp3bJfSrRuk>
5. Fig. 9: A spatial narrative which visualizes Arya's travel to King's landing, from the TV series Game of Thrones. Source:
<https://storymap.knightlab.com/examples/aryas-journey/>
6. Fig. 10: A spatial narrative made using Google Tour Builder. Source: <https://tourbuilder.withgoogle.com/>
7. Fig 11: A spatial narrative of Mahabalipuram made by Archaeological Survey of India, on Google Maps. Source:
<https://artsandculture.google.com/partner/archaeological-survey-of-india>
8. Fig. 12: Dispersion plot of Ahab and whale in the novel Moby Dick. Source: Jockers, M. L. (2014). Text analysis with R for students of literature. New York: Springer.
9. Fig 13: Writing without words by Stefanie Posavec based on the novel 'On The Road'. Source:
<http://www.stefanieposavec.com/writing-without-words>

All other images are sketches, photographs or illustrations by the author

Appendix - A

Some of the words used in the report and their meaning

- Khasak - the fictional village in which the novel Khasakkinte Ithihasam is set.
- Thasrak - a small village in Palakkad district which has inspired the fictional village of Khasak. Note that the village has inspired Vijayan in creating Khasak, not in creating the novel Khasakkinte Ithihasam.
- Njattupura - A small house in which rice is stored after cultivation. O.V. Vijayan stayed in a Njattupura during his stay in Thasrak village.
- Koomankavu - a place outside of Khasak village. Though outside of Khasak, the novel has lot of references to Koomankavu.
- Oathupalli - A mosque in Khasak where students from Muslim communities attended religious classes.
- Chethalimala - Hills that lie behind Khasak village
- Ecology of Khasak - Animals, plants, insects, dead people, ghosts and other supernatural elements that inhabits Khasak
- Settings - A setting is where action in fiction takes place
- Magical realism - the term used to describe the works of writers such as Gabriel Garcia Marquez, Jorge Louis Borge and Isabella Allende and not the term used to describe the works of painters such as Frank Roh.