

Degree Project
"Power of Stories"

Submitted in partial fulfillment of the requirements of the degree of

Master of Design

by

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Guide:

Prof. Sumant Rao



Animation and Film Design
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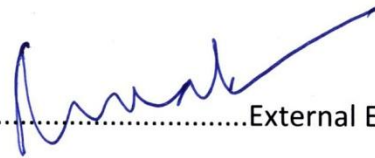
INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
2013-2015

Approval Sheet

The degree project titled "Power of Stories" a short animation film by Vinayak Pancholi is approved in partial fulfillment of the requirement for M. Des. Degree in Animation and Film Design.



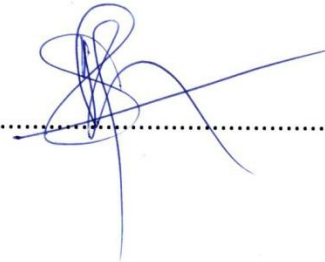
.....Project Guide



.....External Examiner



.....Internal Examiner



.....Chair Person

Date: 28-4-2015

Declaration

I hereby declare that this report is submitted by me in the partial fulfillment of the requirement for the award of MASTER OF DESIGN. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Vinayak

Vinayak Pancholi

Signature

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Date: *21/4/15*

Acknowledgement

I sincerely extend my deepest gratitude to my guide Prof. Sumant Rao for his immense guidance and support throughout the project. My family and friends for all the faith, encouragement and moral support which proved to be one the most essential ingredients of this film.

I would also like to thank Prof. Shilpa Ranade, Prof. Phani Tetali , Prof. Nina Sabnani, and Prof. C.P. Narayan for their invaluable suggestions during all presentations.

Vinayak Pancholi

Abstract

Stories literally shape our decisions. Stories define how we make sense of our lives and the world around us. Stories are everywhere, every day we experience different experiences and remember those experiences as series of events which could be translated as a story at grass root level.

The motivation of this short film also comes from similar life changing experience I found in books and how they changed my perspective of the world around me. In similar way this film depicts the life changing experience of person deeply biased in his thoughts and actions and how his experiences throughout the film changes his perspective of life moreover define the meaning of life and world itself.

The treatment, texture, colors and the CGI world in this film try to express a visual experience of a persons' journey through the pages of a book. The film is not only a journey across landscape but also it is a journey of the state of a mind going through a strong turbulence of hard choices.

This report covers the formulation of the story, concept generation, visual development of the film throughout all production stages.

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Introduction

"Who looks outside, dreams; who looks inside, awakes."

- Carl Jung

The film is a linear story of a day in the life of a young budding hunter of a local tribe living in arid and semi-arid land surrounding the Kalahari desert. Film is particularly focused on one particular hunt which turns out to be much more than what he initially thought. The hunting chase takes him to places and puts him into situations which forces him to take extraordinary decisions which changes the course of his life forever.

In real life we don't make choices by apparent on the spot decisions but there are immense forces working in the depth of our mind which already had defined our choices for us. Our daily experiences mould our total consciousness, behavior and decisions in similar future scenarios. These experiences may happen in real world situation or in make-believe places. The fictional world in stories provides us similar experiences just as the real world or they can takes us to places we may never go otherwise or puts in situations we may never face. The outcome of these fictional stories gives us a entirely new perspective. Using this concept, this film's protagonist also go through similar experiences which moulds his identity and induces a sense of realization.

Here in this story protagonist being raised in harsh lands of Africa have to make massive decision which affects both his life and the people depending on him forever. Will he be able to choose between what is right or what is easy? This is a question this film tries to answer.

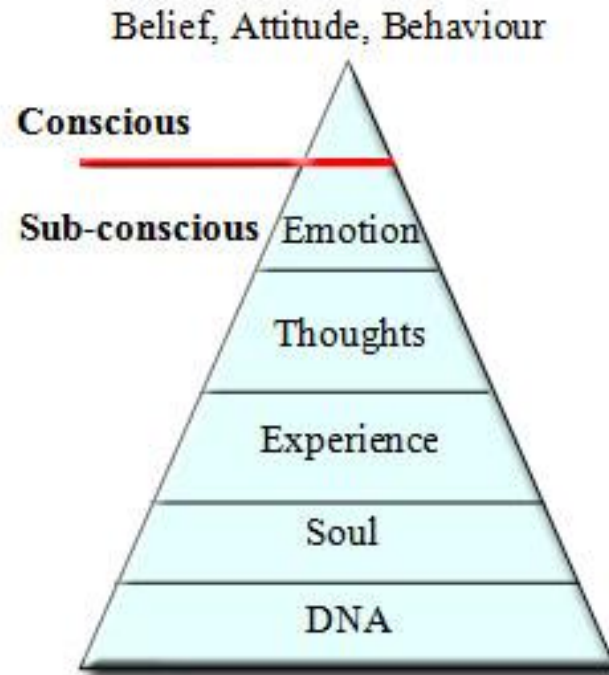
Research

In order to portray the significance of stories in our lives there were several way I could have approached the subject.



Out of all the above choices one of the most fascinating facet of stories for me is the need to tell stories and the origins of stories. Some other perspective I want to incorporate in the film is a need to preserve the memory of the events that happened.

One of the most fundamental ways to tackle this by understanding the human mind itself and the nature of consciousness. How mind perceives the world and how that perception shapes its nature in subtle ways. This will enable me to understand the how we remember our past event and what role those memories play in changing us.



The Conscious and Unconscious Mind

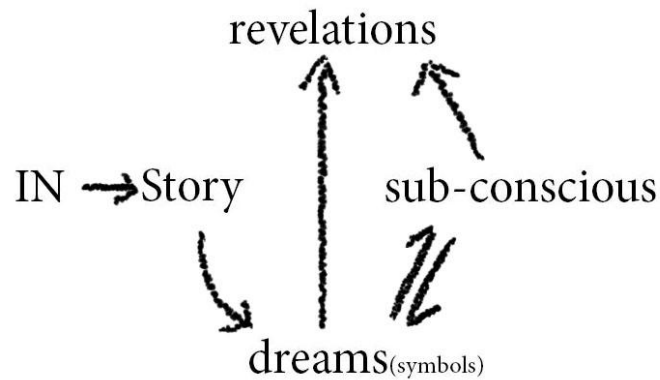
As I studied research articles on human psychology, I grasped the general understanding of the human mind and how memories lie beneath the surface of consciousness. If stated briefly our conscious mind is our awareness right at present moment. It covers both our inner mental processes and our awareness of external activities.

On the other hand, the subconscious mind is much deeper. Largely in consists of underlying information which is accessible through a simple memory recall. For instance memory of recent celebratory event or story of movie one may have seen couple of days ago. We do not think about those events all the time but can recall easily.

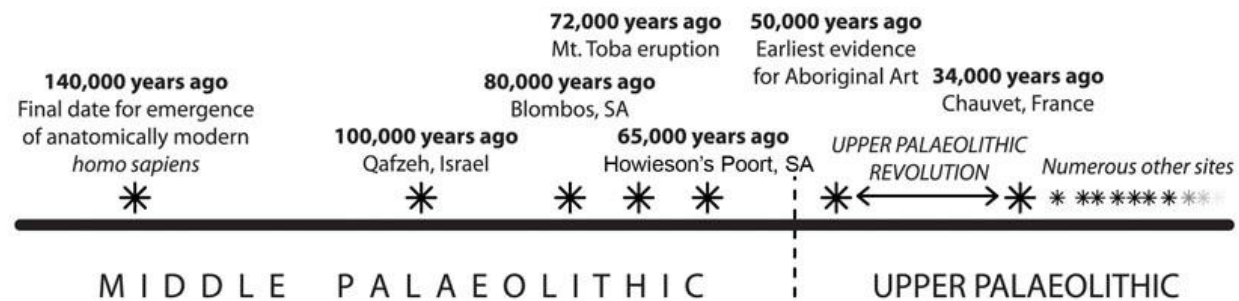
The unconscious mind is even more deeper and quite vague in our understanding even today. Massive research has already undertaken and still going on the understanding the full capacity of unconscious mind and its implications in understanding the existence of matter itself. Out of all the underlying functions the unconscious mind does, those functions which are relevant to this film is it being the vessel of primitive, deeply embedded non-accessible wishes. the unconscious forces drives our behavior in immense way, it defines our choices but we don't have access to the reasons which drives those choices.

"During our childhood, we acquired countless memories and experiences that formed who we are today. However, we cannot recall most of those memories. They are unconscious forces (beliefs, patterns, subjective maps of reality) that drive our behaviors."^[1]

These memories and experiences can bring about a revelations when facing certain dilemmas, giving us a whole new perspective of the situation.



Building on the scenario of a person being intellectually simulated by series of events, which empowers him to do extraordinary things in life, I started the search for those apex points in human history which are considered milestones of human evolution. One of such milestone it the creation of art itself.



Timeline of Middle & Upper Palaeolithic events relating to *homo sapiens* spp.

[2]

According to archeologist and historians, the oldest pieces of aboriginal art yet discovered are not older than 50,000 years. This lead to search of the oldest tribes which created pieces of art primarily

for telling stories and preserving them. Thus, creating the first pieces of rock art, a medium which allows him to preserve his stories for the future generations to come. Some of those culture include San people of Africa, Australian aborigines and first modern humans of upper Paleolithic era.

For this film I have taken beliefs and practices from a wide spectrum of cultures across the globe but most contribution is taken from San people of Africa as they have most fascinating culture and practices as describes in the following research and also the abundance of documentations on their lifestyle.

African Bushmen

The San 'Bushmen' also known as Khwe, Sho, and Basarwa are hunter-gatherer peoples and the oldest inhabitants of southern Africa especially the Kalahari desert. Genetic evidence also suggests the San Bushmen are one of the oldest peoples in the world.

In order to weave the story of a person undergoing a gradual change in his life, I have to carefully study the typical day of that person. This included his culture, daily practices, his recreational practices and most importantly his beliefs.

Bushmen Practices

Bushmen has a rich culture which is primarily derived from the land they live in. Their smallest of habit is somewhere derived from the nature. Here are some of the prominent cultural practices of San people which influence the film.

For instance, animals are inseparable part of their lives, it appears in their four most important rituals: boys' first kill as a rite of passage to manhood, girls' puberty as a rite of passage to womanhood, marriage and trance dance.

Trance Dance and its appearance in Rock art

As I learned more about the San people and their rock art culture, the most aspect of their social gathering is the trance dance. It appears not only for the healing of the sick but also serves as a social and sacred functions.

They do the *Great Dance* during general community practices such as healing, marriages, removing societal tensions and singing to the gods for rain. This dance are pervasive in San rock art, not only because this dance has immense significance in their lives, but more importantly because the act of making rock art have been part of retelling the events that happened to the Shamans or other participants while he was in trance.



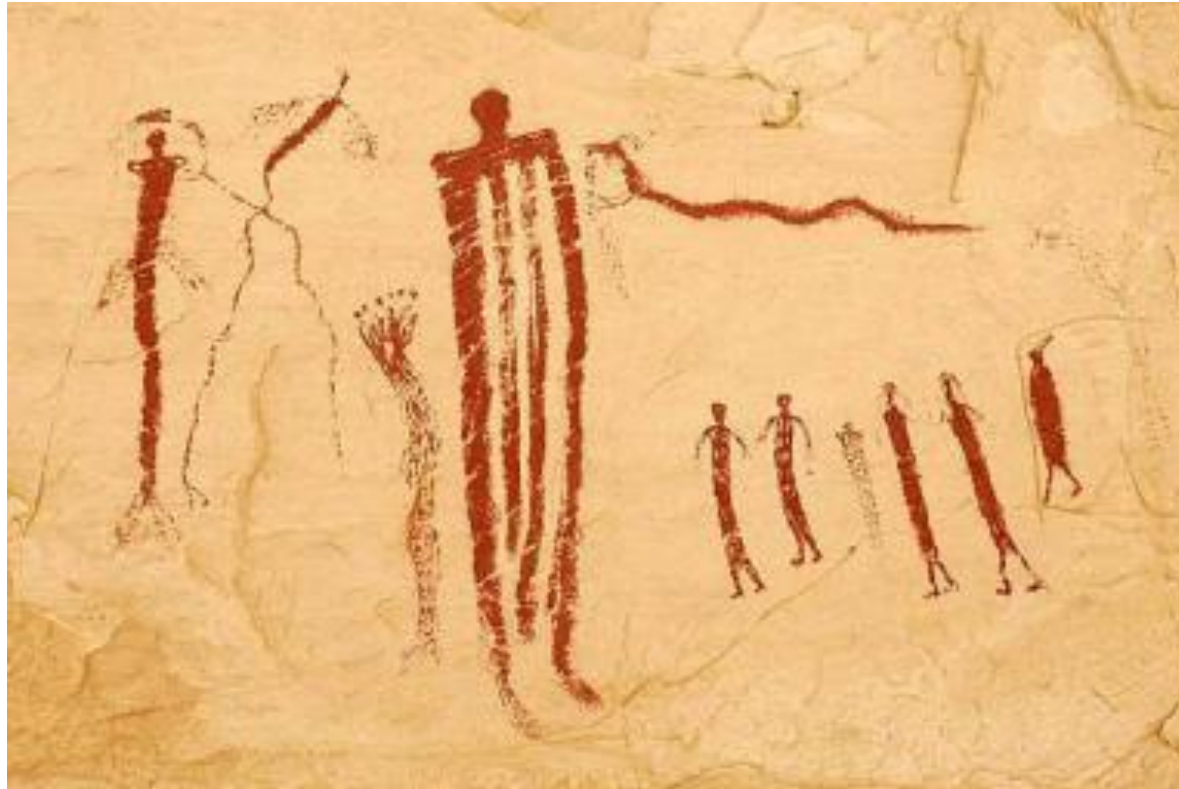
"At a trance dance the women sit around a central fire and clap the rhythm of songs. The men will dance around the women. With the sounds of the dancing rattles and thudding steps combined with the women's songs they activate a supernatural potency that resides in the songs and in the shaman themselves. When the potency 'boils' and rises up the shamans' spine, they enter a trance. The shamans rely on hyperventilation, intense concentration and highly rhythmic dancing to alter

their state consciousness. Inexperienced shaman can fall to the ground unconscious if they can't control their level of concentration. The shamans' arms stretch behind them as the transformation into the spirit world takes place.

During the trance the shamans perform their tasks, the most important is to cure people of any ailments. They lay their trembling hands on these people and draw sickness from them into their own bodies. Then, with a high pitched shriek, they expel the sickness through a 'hole' in the nape of the neck. The sickness thus returns to its source, which is thought to be unidentified wicked shamans."^[4]

As my project titled "Power of Stories" depicts a great change in a person's life it seems apt to show this by retelling the story of the first trance dance which healed the protagonist in the end. And in the end, the following day of his healing, the shaman will tell people of his experiences with the spiritual world and from these experiences that the Bushmen painted the rock art.

This retelling of his story through the rock art, eventually passed on from generation to generation, telling people the ways of the nature, how to harness the spiritual power, making them familiar with the mythology about the spirit world and beliefs about the healing ritual. The visions that is seen by the protagonist in the trance, is where he gets the inspiration to paint.



3]

In order to retell the event that happened during the dance, I began to collect the real stories of visions of actual southern African Shamans during trance state. Building up of actual picture of a person in higher state of mind during trance state in animation required extensive study of the oldest of short stories which has been passes on to next generation, the significant flora and fauna in their culture, and most importantly their rock art.



In all major rock art sites in Africa, the art images depict uneven distribution of fragments of the dance rather than entire dance scenes. Animals are of great significance in the trance dances. And only some particular ones are depicted in the scenes but not just any random selection of animals. Those animals that are believed to have special supernatural potency in their culture such as eland

or kudu are particularly chosen and repeated often. In actual accounts of events trance dances, the Bushmen told that they become imbued with animal potency which helps them enter a spiritual realm. The rock art also depicts the same by lines of power connecting animals to. The art also shows creative and wildly imaginative magical other-worldly things such as rain-animals, monsters and spirits of the dead people and animals that are encountered by dancers during their out-of-body experiences



Rock art also depicts extensive use of visual metaphors such as showing shamans 'underwater' and 'dead'. However their stories is far more elaborate and tell series of events in the spirit world, such as their capturing of the rain animal, fighting off monstrous enemies or other dangerous forces.



In order to bring about a great change in persons personality by means of revelation during trance dance, I introduced a conflict between persons instincts and intellect. This conflict is personified in the film as conflict between mind of a hunter and mind of a healer. This journey from hunter to healer was inspired by one of the hunting techniques used by Bushmen known as persistence hunting.

Zulu Shamans and White Lion prophecies

While going through the research of verbal legends and other stories of humans being enlightened by spirits or by elements of nature, I came across legends tied to the celestial bodies. The beliefs of animals being created in the 'image' of the natural elements such as sun, moon, wind or water were quite prominent in various cultures.

The folklores of surrounding the white lions were most interesting and quite relevant to the storyline of this film. In modern times, white lions sightings were first recorded in the Timbavati region close to Kruger National Park. Elders symbolizes these majestic creatures as angelic messengers from God. In various African cultures, white colors represents purity and enlightenment, beyond all racial associations. White is also associated with sunlight comprising all other colors. African elders believe that the White Lions appearance and disappearance is a sign and they only surface when humankind seems to be facing some natural peril and are here to deliver a sacred message for humanity at this time of crisis.

For many centuries, African kings identified the land of Timbavati as a protected area; its name “Tsimba-vaati” is derived from the ancient Shangaan language and means “the place where star-lions came down from the heavens.”^[5]

Persistence hunting

Persistence hunting is a hunting technique in which hunters run, walk, and track their prey to the point of exhaustion. Humans reduce their body temperature by releasing sweat via sweat glands, while their prey would need to slow down and pant to lower body heat.

During the persistence hunt an antelope, the animal is not poisoned via dart or speared from a distance, but simply run down in the midday heat. San bushmen of the central Kalahari chase a kudu for extensive amount of time of about two to five hours over *25 to 35 km (16 to 22 mi) in high midday temperatures of about 40 to 42 °C* ^[6]. The team of hunters chases the kudu, which usually then runs faster and soon goes out of sight to find shade and lower body temperature from extreme heat. But by tracking it down again and again at a constant endurance run the hunter catches up with it before it has had enough time to rest. This repeated the animal it is too exhausted to continue running. The hunter then kills it at close range with a spear.

Concept Development

After learning all the important legends of the African tribes living in the surrounding regions of the Kalahari Desert along with their beliefs and practices, I start to weave the story in a single linear narrative.

Story

Story version 1

Protagonist comes to age and is sent to kill an animal for his initiation as a man from boyhood. He was a ambitious hunter and wants to become the hunter of hunters and decides to kill a lioness. He tracks down a lioness by hearing her roars.

When he gets closer he finds out that her litter of cubs have been trampled to death by a herd of angry buffaloes and her roars are sounds of her mourning. He is heartbroken an follows her for days trying to find a way to sooth her sorrows. Lioness has lost her will to live and gives up eating and drinking. On one particular day, due to a lightning strike, a wildfire start to build up and threatens both of their lives.

Protagonist hunter is surrounded by the fire and has nowhere to go. Then the lioness comes in and save him from the fire but herself gets mortally wounded. The hunter then transfers his hunting strength and instinct to lioness in order to save her and bring her hunting spirit back. The lioness then heals and goes away in the wilderness on her own path. And the hunter learns a whole new

side to the animal kingdom that comprises of passion and love as a dominating emotion rather than ruthless survival instinct.

Final Story

There is intense drought in Kalahari desert. There is a shortage of food. Protagonist in the film is a young whose mother is sick and his family is facing starvation. He sets out to hunt a kudu bring the kill to feed his family. By hunting through the ancient fashion of hunting by persistent running, he wishes to gain the its strength of his prey so that he will to be able to kill bigger animals in his next hunt.

After hours of trekking the harsh lands he tracks down an animal drinking water at a water hole and decides to kill it. But the animal was a lioness and she was a spirit. The chase begins, all along the way the lioness tries to elude him by shape shifting but he remained persistent and kept on her trail. For some reason the lioness didn't wanted to attack him. In the heat of desert and his fatigue he goes into a trance like concentration and felt the essence of his prey in his body. He begins to see an alternate world in his trance state. At last he is able to mortally wound her with his spear.

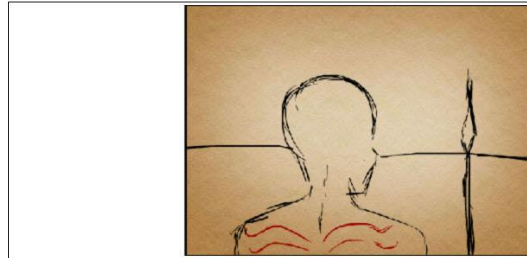
Before dying the lioness assumes the form of a human. The hunter asks her who is she and what is she doing in form of a lion. She answers that she is the spirit of motherhood and sowing the seeds of life in the desert and if she didn't go back to her children in time then they will die and nature's balance will be lost.

He's in dilemma and says that I need your strength to hunt bigger animals so that my family could live. "There will be no animals if I die", she replies. In her final moments the hunter realizes the pain her children will go through if she dies as he himself going through similar circumstances. In the end, he chooses to give his strength to the lioness and save her life. The spirit then assumes the form of a lioness and says , "I cannot give you my strength back but I can heal you some other way". Then she takes a burning ember of life out of her mouth and blow till it becomes a huge fire and then tells the protagonist to walk to the fire. He gathers all his strength and her runs through the amber. The spirit fire from the sun forces him into the trance state again this time as a observer. The fire heals him intellectually and give him the understanding of all nature. All this knowledge inspires him to paint on rocks so that his future generation could benefit from his knowledge.

Storyboard/ Thumbnails



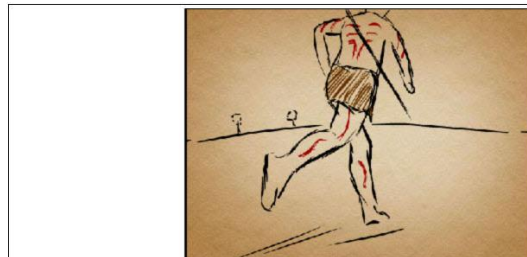
Action Notes: Protagonist is downhearted by his starving family.



Action Notes: Protagonist sets out to hunt a kudu bring the kill to feed his family.



Action Notes: He tracks down a lioness drinking water at a water hole and decides to kill her.



Action Notes: The chase begins.



Action Notes: The protagonist wants to hunt her by persistence running.



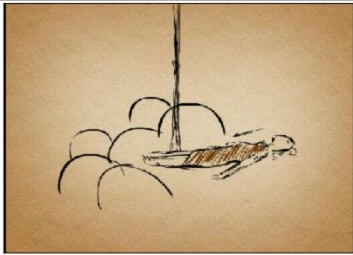
Action Notes: The lioness was special and shape shifts to elude him.



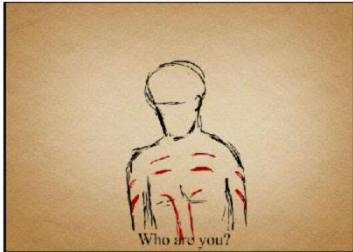
Action Notes: The hunter was stubborn and tracks her down.



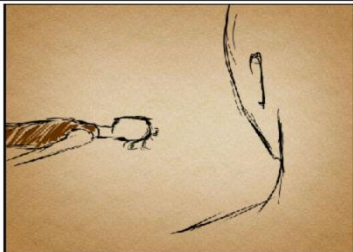
Action Notes: At last he is able to mortally wound her with his spear.



Action Notes: Before dying the lioness assumes the form of a human.



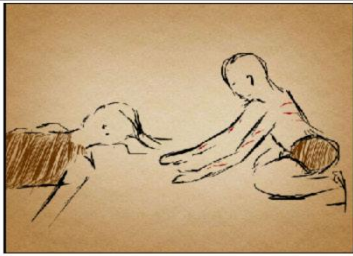
Dialogue: Hunter:- Who are you and what are you doing in form of a lion.



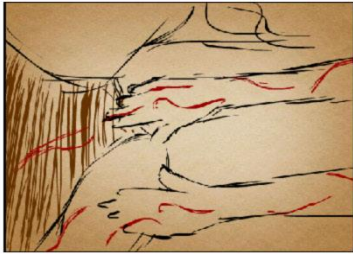
Dialogue: Lioness:- I am the spirit of motherhood and sowing the seeds of life in the desert and if I didn't go back to my children in time then they will die and nature's balance will be lost.



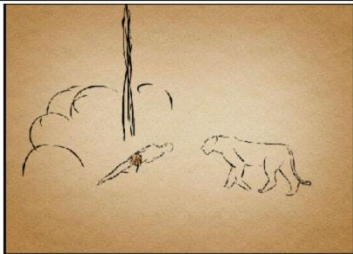
Dialogue: Hunter:- But I need your strength to hunt bigger animals and feed my family.
Lioness:- There will be no animals if I die.



Action Notes: He chooses to give his strength to the lioness and save her life.



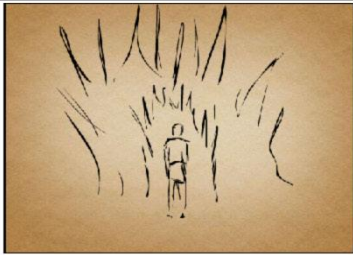
Action Notes: Strength and energy flows from the hunter to the lioness.



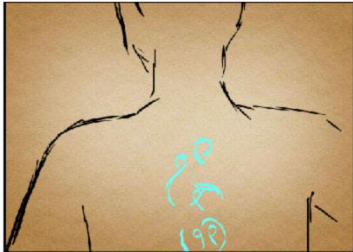
Dialogue: Lioness:- I cannot give you my strength back but I can heal you some other way.



Action Notes: She takes a burning ember out of her mouth and blow till it becomes a huge fire.



Action Notes: Lioness then calls entire nature to perform the shaman dance around the fire.



Action Notes: The fire heals him intellectually and give him the understanding of all nature.



Action Notes: He takes the healing fire to heal other people.



Action Notes: The knowledge inspires him to paint on rocks.

Visual Development/Exploration

Influential Artwork

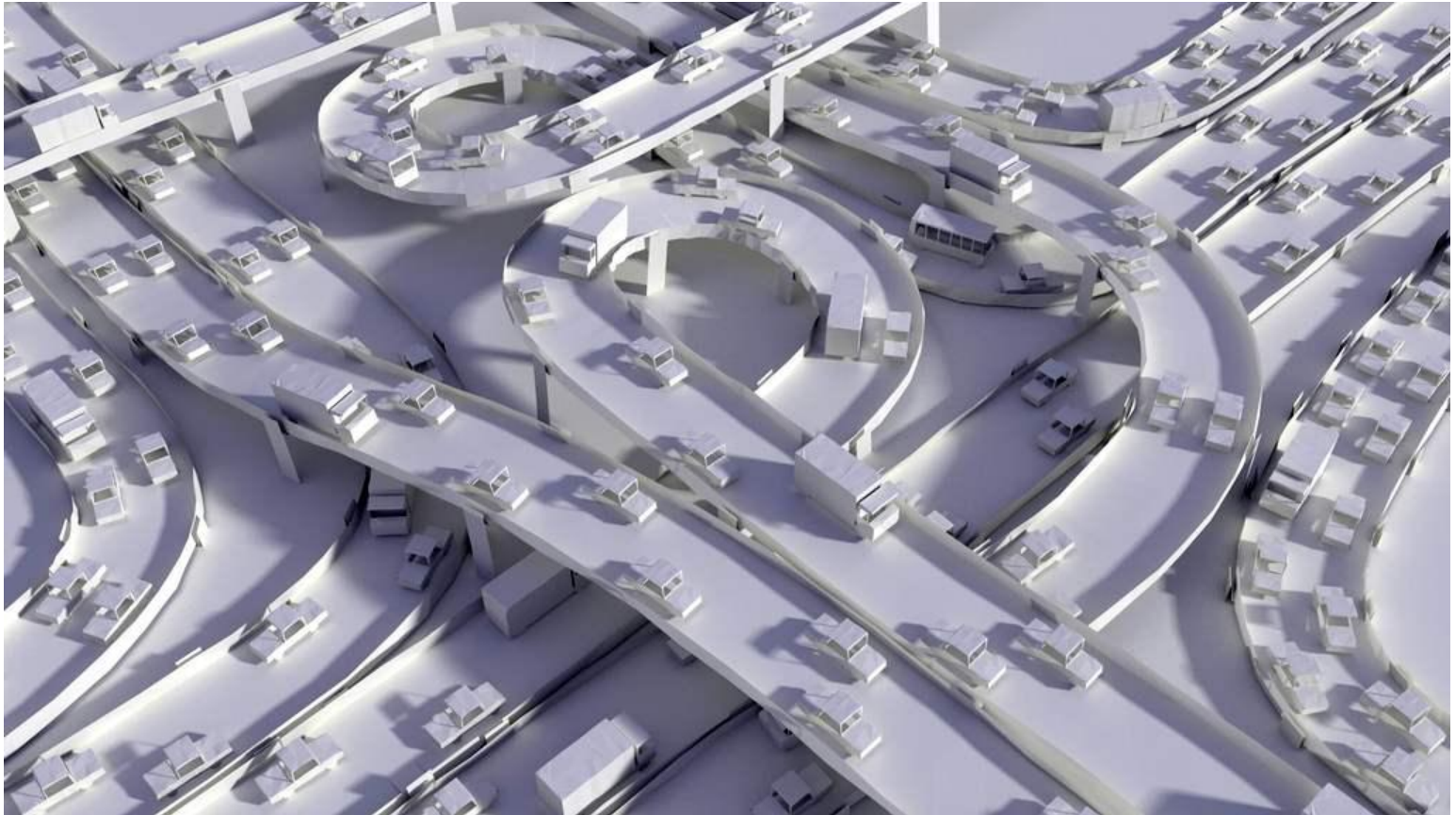
In order to recreate the desolate landscapes of Kalahari in a world made of paper, I began studying the artwork of influential artist, proficient in both physical and digital mediums.

Pingo van de Brinkloev's presentation at IBC 2014 on his recent short film 'It's Paper' was most illuminating and relevant regarding creating 'digital paper' using procedural texturing and rendering techniques.



Works of Jeremiah Shaw and Danny Jones explores shapes and forms of still life objects to celestial bodies, helped a lot in creating the landscapes, characters and physical phenomenons for my film.

Works of Jeremiah Shaw featuring on geoday.com^[7]



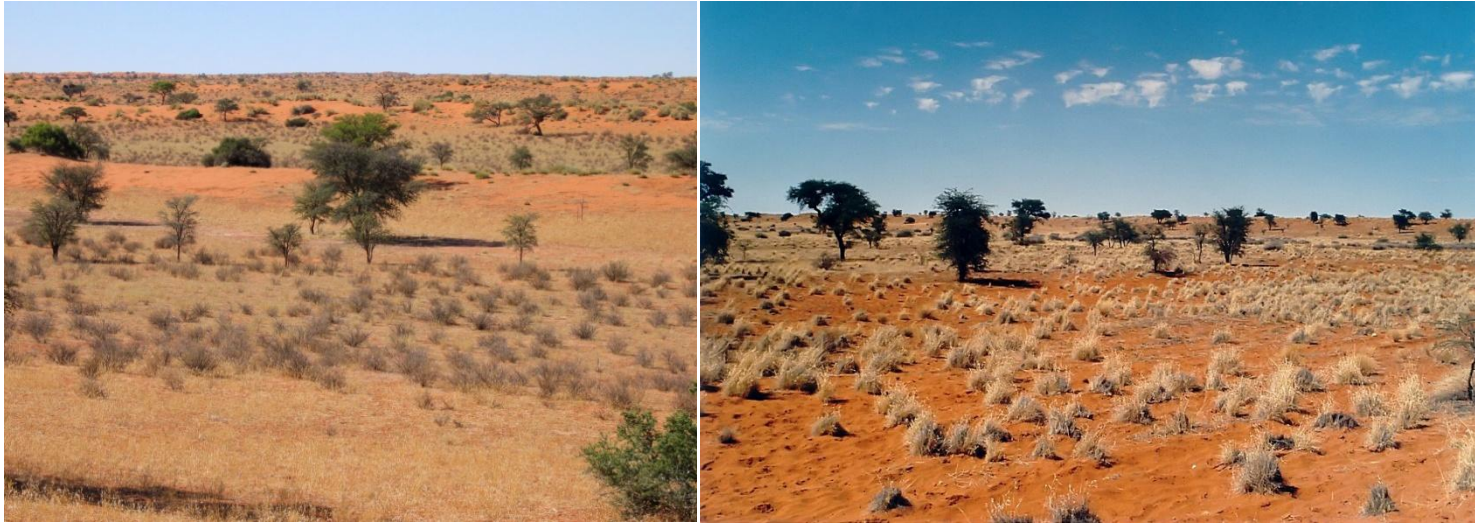
Screen shot from Pingo van de Brinkloev's short film 'It's Paper'^[8]



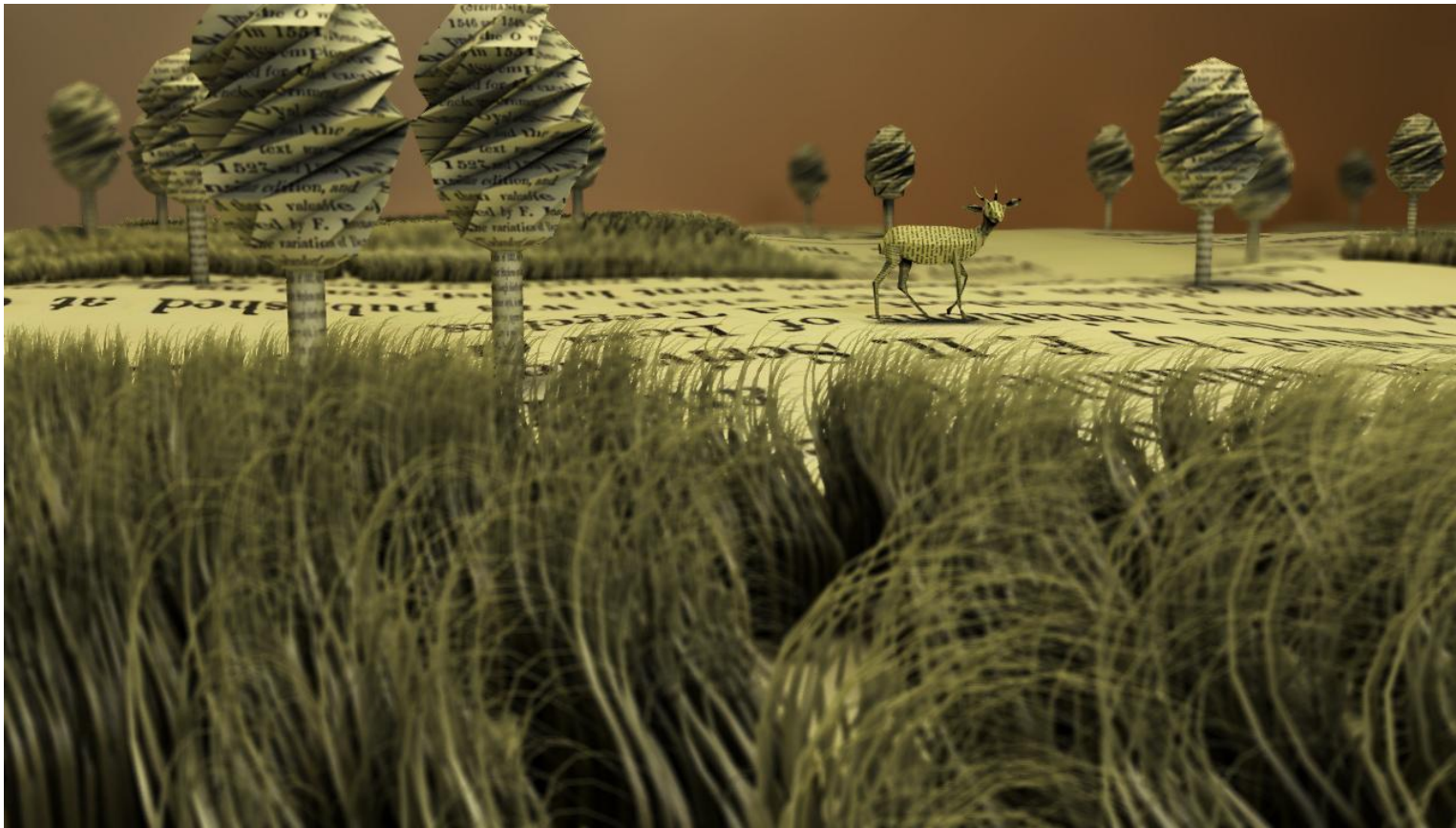
Low-poly characters featured as 'Geo Band' by Jeremiah Shaw^[7]

Concept Art

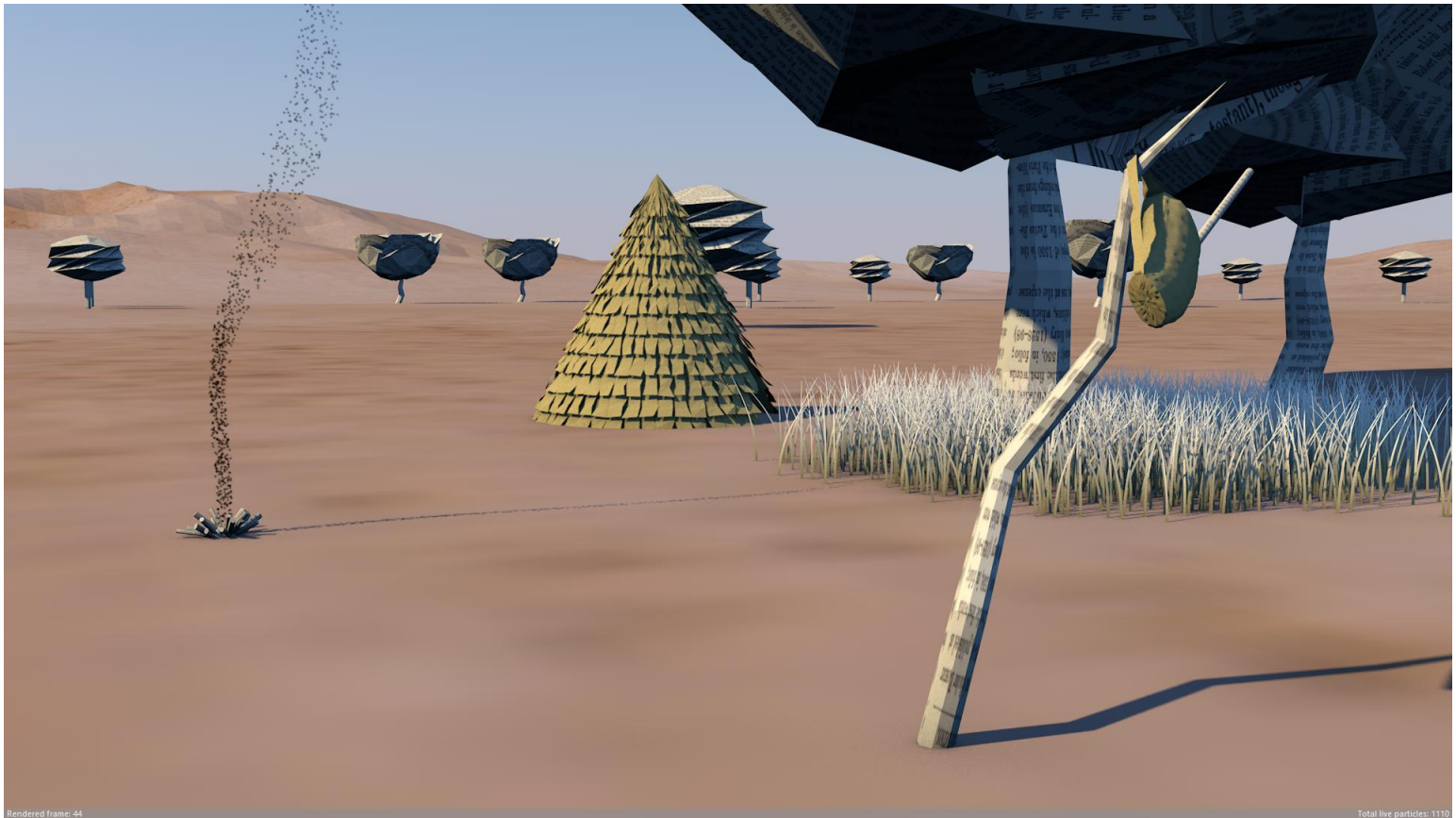
To create the semi arid regions of Kalahari desert, I studied the pictures as well as video footages of the desert over the web.



Keeping in mind the original reference of the desert I tried to recreate the landscape in CG software using paper texture of old story books and novels.



One of the iteration in the look development of African bush.



Final visualization of the film.

Character Design

All the characters in the film will also be modeled and textured in the similar manner as the landscapes. I tried to achieve a blend of origami and realistic anatomy on both humans and wildlife.

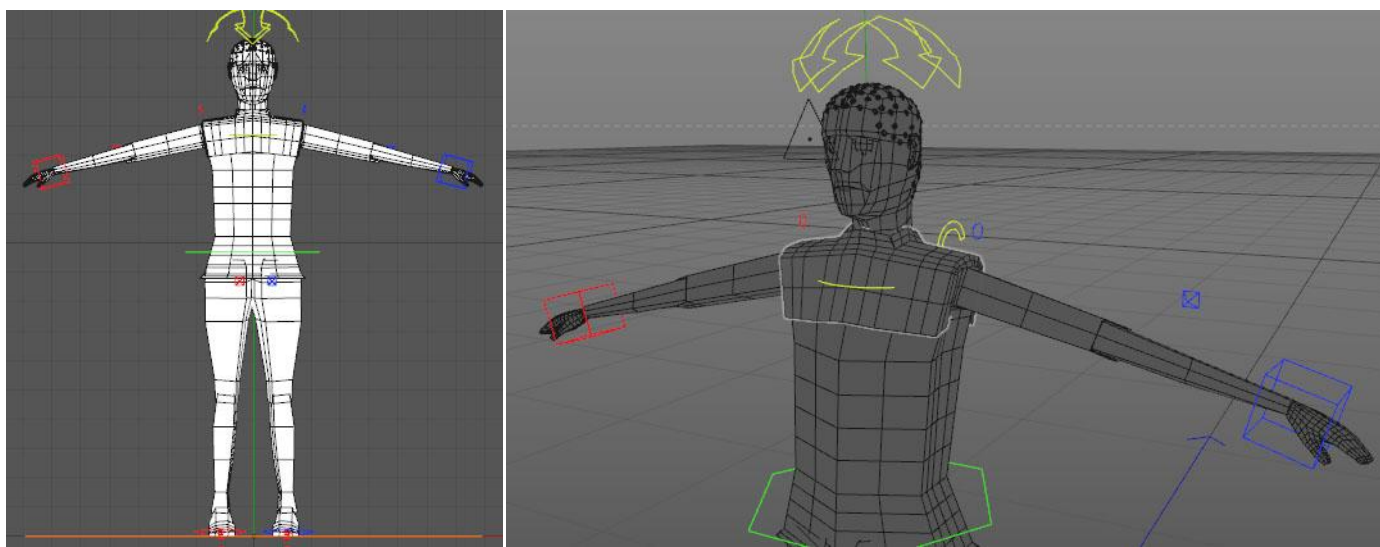


Cardboard/paper look from one the test render of these paper characters .

It is essential for the world to look like it is made from paper. Instead of introducing seams in the paper similar to origami, I wanted the characters to retain their volumes and paper seams could be inserted later as bump maps when texturing the models.

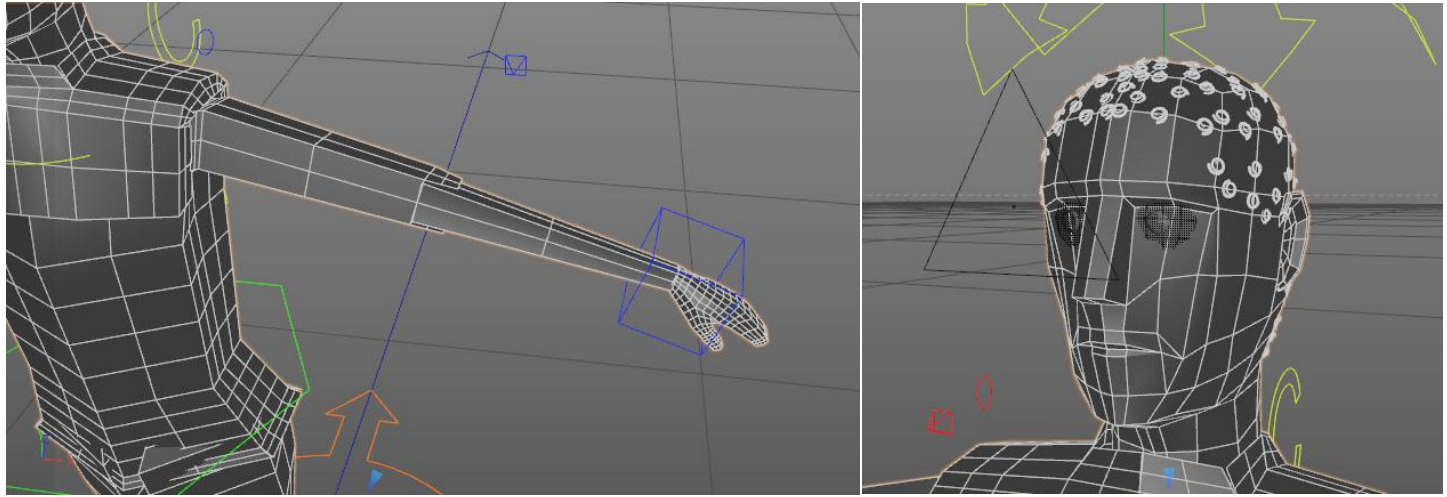
Character Setup

After studying the basic anatomy of bushmen, the next step is to build up the 3d mesh of the characters and then rig the mesh for animation.

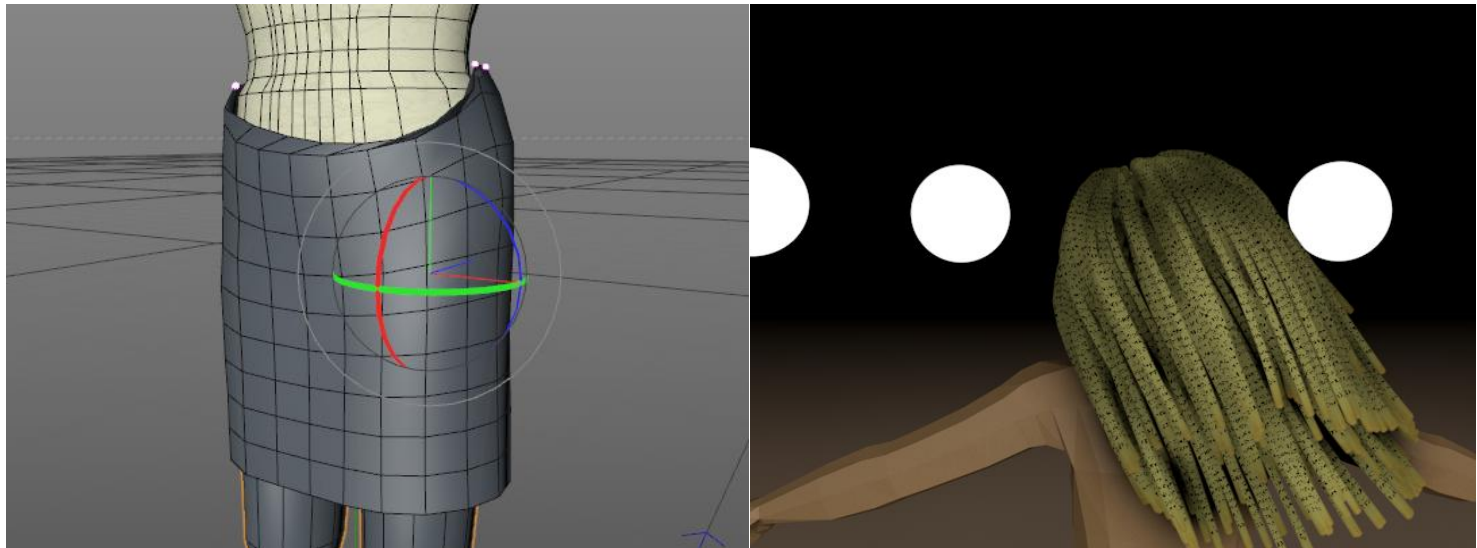


Lead protagonist polygon model containing almost 3500 polygons

The polygon model was created using basic box modeling technique and minute facial features employed extensive spline modeling techniques. The entire mesh is created as a prototype for other biped character in the film. This prototype mesh can be saved as a present and reused or readjusted to make other characters.



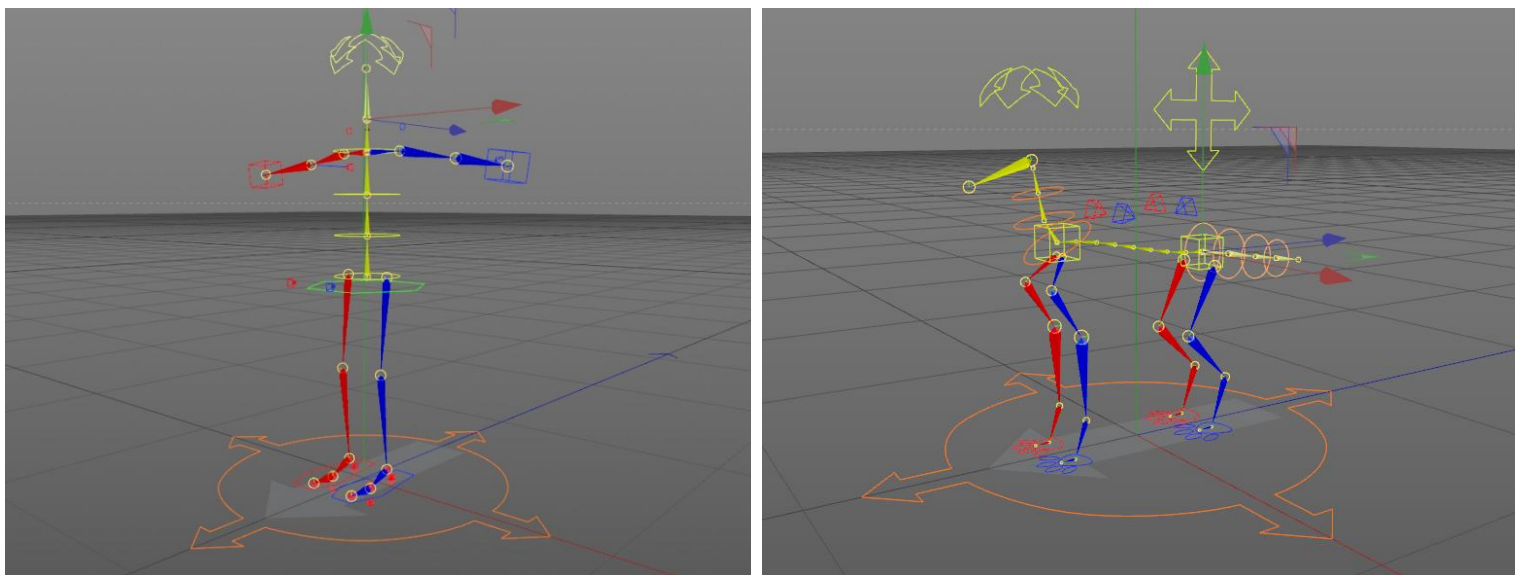
Reusable meshes for body parts(left). Facial features were stitched to the torso(right)



Cloth and hair simulation tests.

Features of characters such as hair, clothing and joints also have a paper-made look and feel. These significant features were further enhanced by shading and texturing. For instance in below screenshot, I tried to recreate long hair dreadlocks in paper form as if they were made from rolled paper glued together on the scalp. These hair retains natural spline dynamics and can physical interact with each other fairly similar to natural hairs.

Instead of modeling a static mesh for clothing, I am using clothing engine to move the mesh according to real world physics and retain the stiffness and elasticity of a paper.



IK skeleton of biped(left) and quadruped characters.

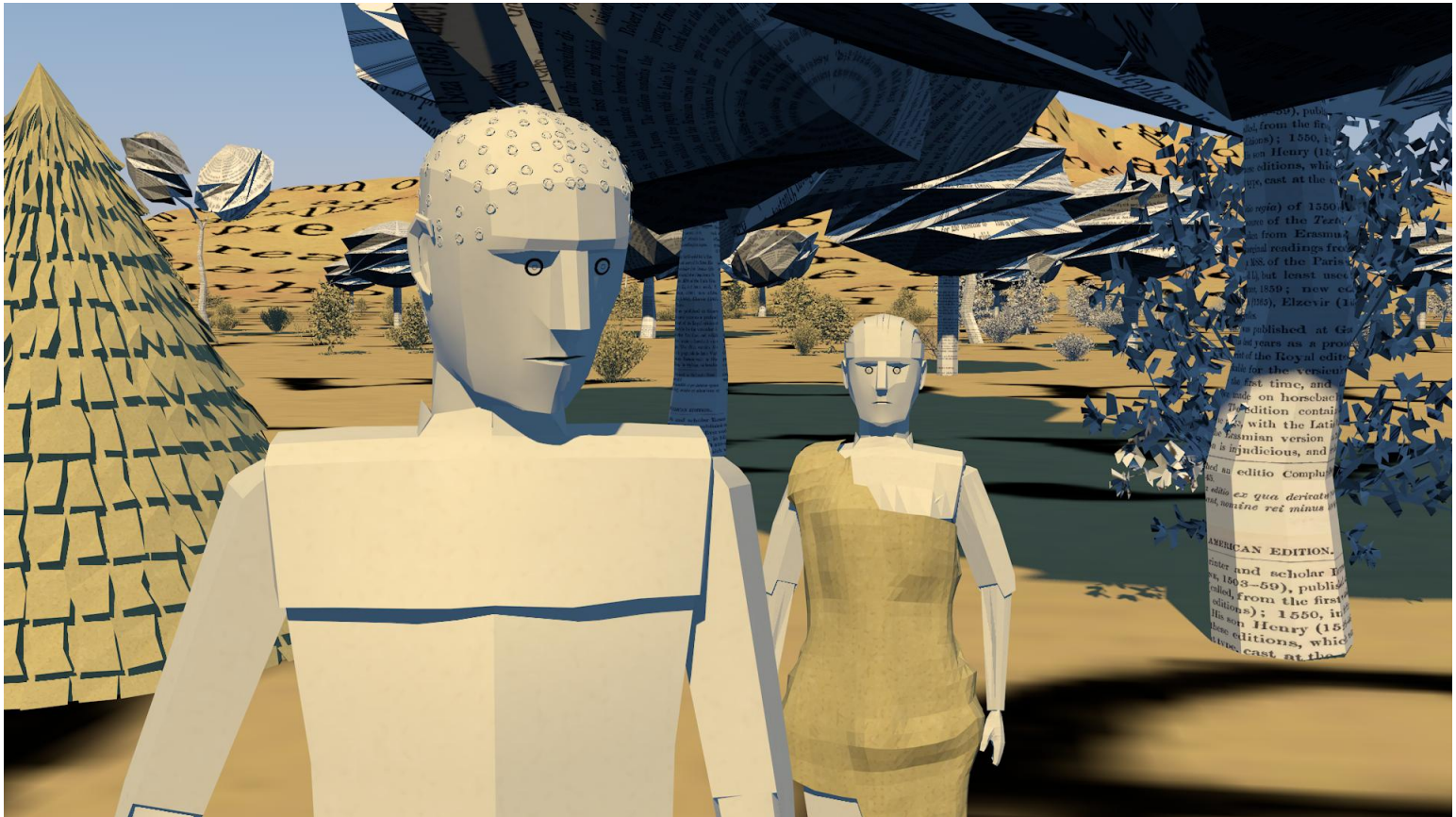
I used inverse-kinematic bones and controllers to create both biped and quadruped character skeleton suitable for animation and readjusted the joints to fit the corresponding character mesh. The controllers on the IK skeleton allows movement of one or more bones to a specified position or orientation. For the facial rigging, mesh deformer were used and its controls were programmed to a control slider using expressions.

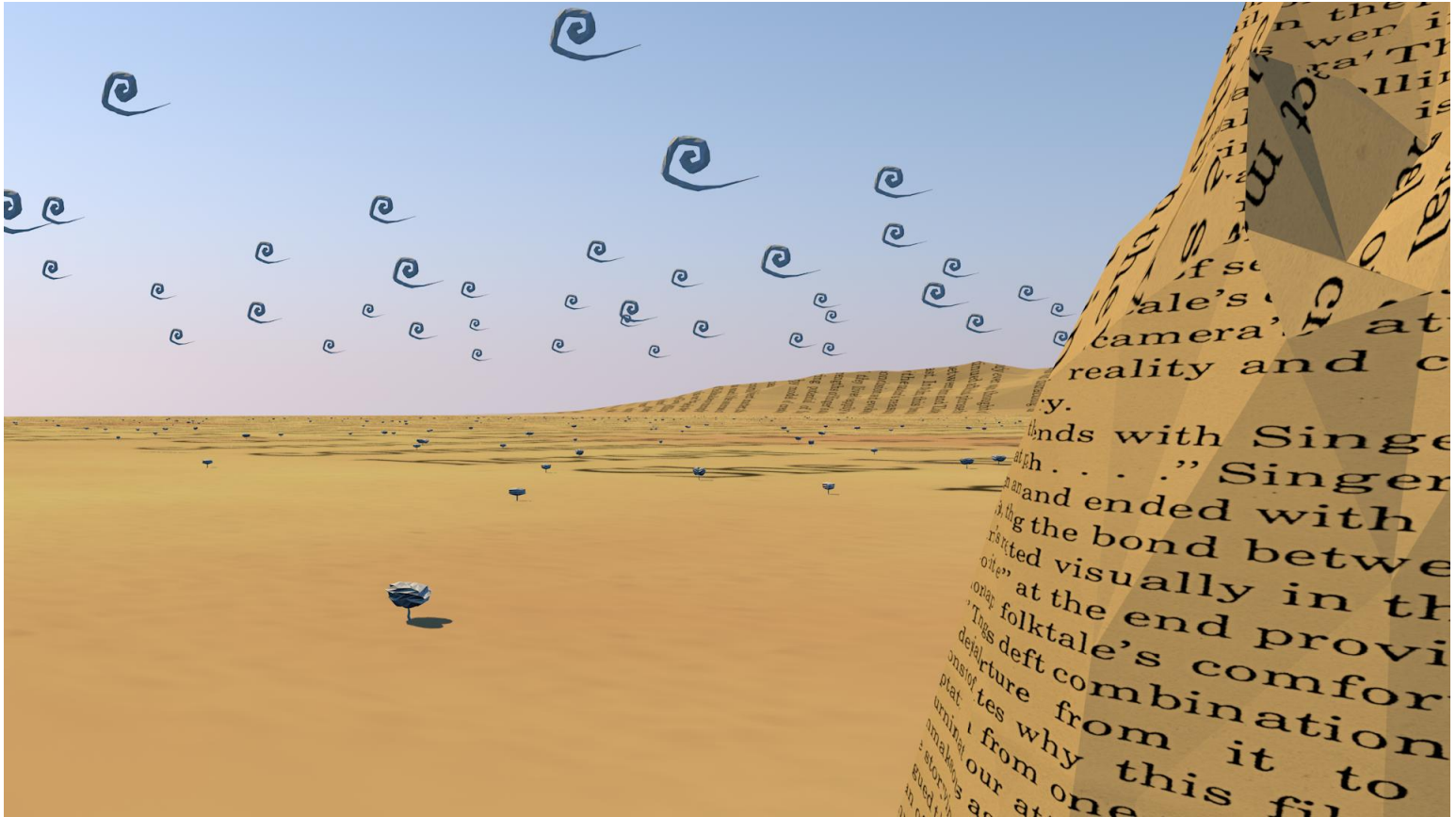


Final rigged model of male protagonist.

Final Screenshots

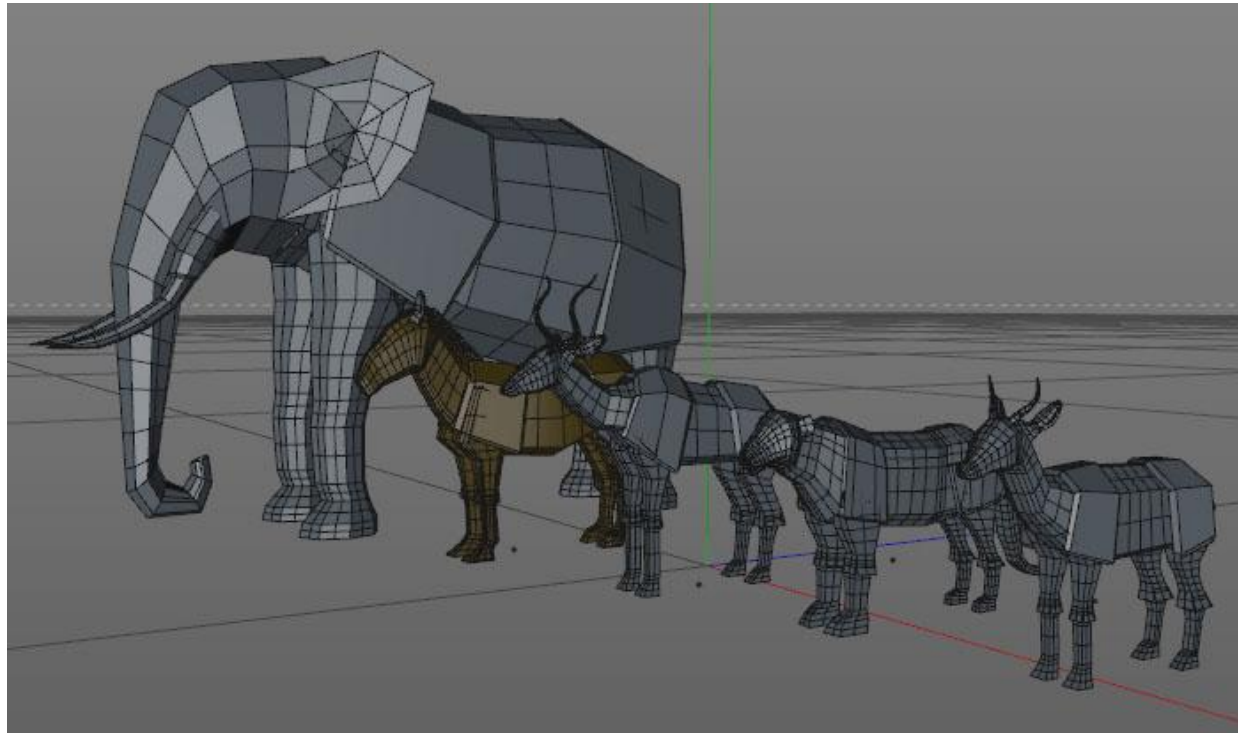
After animation, texturing and rendering stages, following are some of the final frames of characters and landscape from the edit.



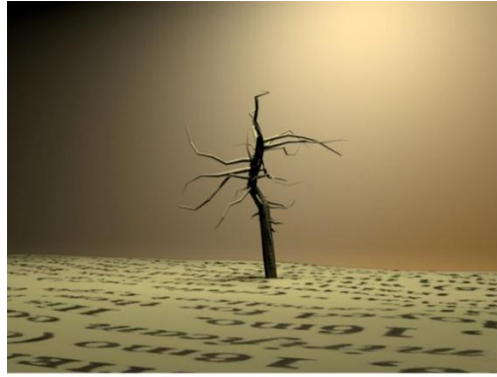


Asset Library

In order to recreate the paper landscapes quickly. I started creating a production library which will store pre-computed simulations and CG models. This will effectively reduce the production assets such as time and energy considerably. The library includes 3D models both static and dynamic, character animations such as run and walk cycles, eye blinks, specific animal behaviors, CG shaders and materials, textures and other special effects presets.



Basic behaviors such as walks of Kalahari fauna was saved in project library.



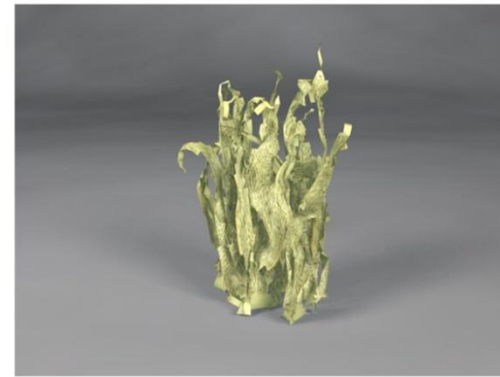
Tree growth test



Landscape elements(rocks) apparition test



Realistic fire simulation test



Paper fire simulation test

Music and Sound Treatment

As the visualization of the film is set in a monochromatic shades of paper, I also want the music to inherit similar properties. Slow rhythmic beats of African musical instruments such as Djembe, Caxixi is employed in certain parts of the film. Eerie desolate soundscape is also employed to depict the severe drought in the film. For dramatic moments such as the chase sequence, soundtrack comprising menacing drums would be appropriate. The final healing of the protagonist sequence, exhilarating and uplifting music consisting female soprano is used.

Film also requires extensive paper and book sounds for the Foley sound effects. Entire film would have fairly realistic foley sounds, comprising of sounds of animal movements, natural phenomena such as wind, water, fire.

Conclusion

The techniques I learned during the pre-production of this film immensely refined my approach towards animation design projects. The research gave me a whole new perspective of diverse cultures and the significance of nature in their daily lives.

I learned the art of film making especially developing script from scratch. This project also enhanced my technical skills substantially. I have discovered my strengths and weaknesses not only in terms of creating the work but also as evolving self. I also learned the importance of planning before starting a film and also being organized. I formulated several techniques for faster production of animation and rendering and devised appropriate workarounds for numerous setbacks I encountered during the production.

This film is a significant milestone in my life in terms of learning and experience. Hopefully this knowledge will aid my future animation projects from ideas to pixels.

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