

# Mohenjo Daro is my first digital feature film

– C.K.Muraleedharan

By [Manoj Sharma](#) • 23 hours ago • [Cinematography](#), [E-Zine](#)

Mohenjo Daro is the kind of film that any DoP would like to shoot. It is a period film with a lot of scope for the camera. Pandolin spoke at length to the film's Cinematographer, C. K. Muraleedharan (ISC), on every possible aspect that went into achieving the images. The master DoP has worked more like a scientist on this epic drama. And it was full of many firsts for him. Here's what he shared with us.



C.K Muraleedharan, DOP Mohenjo Daro

Mohenjo Daro is your first period film. How did you go about it? Talk about your preps with director Ashutosh Gowariker on the look and feel of the film.

Yes, it is my first period film. I wanted to do a period film from a very long time for a lot of cinematographic reasons. But this became too period for me.

(Laughs) It went all the way to the pre-historic time. So, the research aspect of it was very challenging. A lot of work was already done by Ashutosh and his crew before I joined. But I had to do my research for my reasons. The Set design was completely locked and constructed, which was as per the original site at Mohenjo Daro. Everything was done according to the reality which could have existed at that time. They had gone into extensive research by talking to experts and archaeologists. They've been working on it for the last five years. There was substantial amount of research with Ashutosh in terms of the look of the film. Right from the size of the brick to be used, to the size of slabs, to the Great bath.

We had clarity about the fact that a society that was so advanced in terms of architecture and technology had had a certain amount of beauty to it. If they could construct and imagine things like that, then that would have affected every aspect of their lives. Whether it is costume, utensils, movement or their art forms. Everything would've been affected by the kind of intelligence that was behind this city. When I went to see the set, I was taken by surprise. It had a huge path way with huge doors. When I entered, I could not see the other end of it. It was a mammoth structure, a barren land with no modern structure interfering. The only hint of modernity came from the aircrafts that were flying above us. Since, it wasn't sync sound, that was also not a concern for the sound department. Everything was amazingly beautiful and at the same time it made you feel small. It was that kind of a set.

The huge corridor that ended in a chowraha (City Square) was done with brick and had awnings hanging. The market square already had shops which were very intelligently propped. Everything was so ancient looking. And this was only one part of the city. Then I got into the car and went to the other part. It was far away from this location and they had placed it in such a graphical manner, as it would have been in the original. So, basically there are two parts of the city – a lower city and an upper city. The upper city is far away on a hill and is more ornate, more color-painted with higher buildings that are pillared.

My next concern was costumes. Specially because there weren't much colors available. Mostly they used terracotta on the walls. Again, the research came handy. They had researched about indigo farmers in that region. All those informations brought colors along with. This lessened my job to a large extent and gave me huge inspiration to work more on it.

Everything was done according to the reality which could have existed at that time

Ashutosh Gowariker is known for period films. How has his knowledge helped in the execution of your work?

It helped a lot. It is not just a period film. Here we are talking about 2016 BC, which is five thousand years ago! You cannot go into books and come up with it. What you have is just a handful of stuff that has been unearthed. But his experience of working on period films helped a lot at the ground level itself.

As audiences, nobody has seen Mohenjo Daro, the city. But we have seen the images of ruins and excavations in textbooks. What was your reference point? While conceiving the images, how much cinematic liberty have you taken and how much of it was research-backed?

Frankly, I cannot take too much of cinematic liberties in such a film. Because in every department we were trying to be as authentic as possible. So, I had to go with the design of the film, which I religiously followed.

For example, there is a temple in the film. It is a temple which is carved inside a hill. So half of it is underground and then it is carved into the hill. It is Sindhu Maa's idol (Mother Indus) and has a pathway which is spiraling down. The idol was about 25 ft tall. While we were designing the set I realized, I would run into catwalk every time I try to accommodate the idol. So we went to the set and made a rough skeleton of the structure with bamboos etc and figured out a way to redesign the set so that we could accommodate the grandness of the temple.

Coming to lights, there are only two kinds of lights that are available in such a location. One is the direct sunlight that you get and the other is diyas (Earthen lamps) that you light. And I had to give the audience the same feel like a guy (Hrithik Roshan's character) who had walked in at that time, into that space. A person who is a farmer in a different village and hasn't seen anything like this. It is amazing for him. And is like a magical world that he is getting into.

People who are watching the film have been exposed to a lot of content over Internet or via films. Their experience of the city is dazzling in that sense. So how do you compete with that image? I did not want anything artificial. So, I decided to light up the space with diyas. I did research about cave temples across the globe that are centuries old to see how light behaves in those areas. I went through all that and then came up with a light plan. This is based on research and is the closest that you can get to replicating what must have been at that time. So, this was my contribution to Ashutosh's research.

Still from Mohenjo Daro

How did you'll go about choosing the locations? How much of the film is on sets and how much on real location?

A film like this depends a lot on sets. But here what we did was to build the set outside, which is a location. So it is not a set anymore. We created a whole city in Bhuj. There were truckloads of people coming every day to work. Ashutosh has had that experience in Lagaan as well. People would start arriving at 5:00 am, at the base camp which was a kilometer away. There they would be given breakfast, made up, their hands would be checked, all tattoos removed and many other things. It was all part of a process of making a film where you have to constantly think of a different era. About how people must have thought back then, their mannerisms etc. It couldn't have any trace of modernity. So, this location (I would always call it a location and not a set) had everything. It was

not just about making a room and shooting. For example, when you are making a house for Maham, the main villain in the film, you need to have everything from his room to his aangan (Verandah). So, everything was very realistic.

How many schedules and seasons was the film shot in?

(Laughs) All seasons. We started in January. Then it went all the way to May-June, which is from the peak of winters to summer. Then we had a break and came to Mumbai and did the sets. We went back again in September-October to shoot the climax. Then we came to Mumbai to shoot a couple of forest sequences. We had a huge opening sequence done in Madhya Pradesh at the Marble Rocks. That was shot in November. We were back in the studio in January. So, it was one complete year of shooting through all the seasons. This was spread across many schedules. The longest one was at Bhuj.

It was one complete year of shooting through all the seasons

VFX is obviously an integral part of the film. What were the key VFX elements used? And how did you plan your shoot so that it gels well with the effects?

Again, we had extensively researched on VFX. The film's climax depended a lot on it and because we were creating something which couldn't be shot in the real sense. Which was completely storyboarded and discussed with the VFX supervisor much in advance. For more than a week, around 15 of us were sitting around a table with a screen in front of us, going through each and every shot which was storyboarded as per Ashutosh's plan. When a 3D image was created on-screen, we would discuss about the image's requirements. So, that when we went to shoot, we are clear about what we were shooting, the extensions, the CG elements, the plates that had to be shot, which side and which light we needed to shoot depending upon which way we were shooting the actor in the scene and so on, so that it all matches. So the VFX and Direction team sat down and prepared a plan which all of us religiously followed.

Talk about the colour palette of the film. And what was it driven by? Any particular colours you have consciously avoided using?

It is not that I was trying to avoid anything. Everything depended upon what would've existed in that era. So the color palette was very earthy. We had browns, indigos, related blues, pastels, even maroons. This was the palette.

Since it is a period film, what was the lighting design adopted keeping in mind the era. What kind of lights have you worked with?

Everything that was done was done according to what could have been their lighting scheme in that era. I will cite an example.

The 'Mohenjo Mohenjo' song is a huge six and a half-minute sequence which was happening in the night at the town square. We were in two minds about whether to do it in an actual town square or put up a set. We compared a lot of elements like the wind, power issues and the lighting. Finally, we put a set. Now

my primary concern was that I did not want to light it up from the top because there was no light coming from the top in the scenario. So, I sat down and made designs of clusters of mashals (Fire torches).

I gave my requirements to the art department and they came with more designs about the clusters of mashals. And we put those up. Now, I did not know how to light it up. My primary need was to light it up from below but by doing that I was inviting shadows. I had to make my artists look smooth and beautiful but at the same time, I had to stay with these mashals.

So, I created light structures made of iron fixtures with the help of the art department. These fixtures had clusters of lights, upto 18 of them. I made around fifteen odd clusters of 650s with loads of lights in one cluster. And they was connected on the DMX board. Since DMX is a programmable board I could control my designs easily. So finally I had these clusters of mashals where I could hide lights inside. It was designed in such a way that I could open it from multiple sides, to control my light. We created magic boxes, we had moving lights, lights on pipes and so on. It was a combination of a lot of things. But when you see it you feel like it has been shot with mashals only. There was a lot of homework that went into bringing out the flickering of the mashals and minute details like that. Similarly, diyas were also used, not just for decoration, but as sources of light. Apart from that, I had some par cans here and there.

As far as the types of lights used is concerned, it is very difficult to tell because I have used all kinds of lights. From small didos to 650s. At one point my gaffer came and said to me, "Sir, industry mein abhi ye light hai hi nahin" (We don't have any more of this particular light in industry at the moment" (Laughs). So, it came to that.

The other sequences of temple that I had earlier talked about were done with 10KMolebeams, that are very sharp focused lights. I created sunlight coming in to the underground area. This is an imagination which we thought of going with. And the image works because it is coming from my research of cave temples.

There was another important location which was a senate hall. That was again a huge set. And I asked Ashutosh his requirements. He said that he wanted windows at the top of the hall. This was not a part of the set because the set had ended (Where the windows were required) and there was a catwalk above it. And the set was so high (20 feet or something) that there was no space to light up. So I came up with the idea of using mirrors. I put mirrors on one side and created a huge catwalk halfway through the set. Then I dumped light on to the mirror and brought it back on to the set. That gave it the feel of light coming from the windows. I fixed a pattern on the mirrors to achieve the desired pattern.

These windows (five of them) were the only source of light in this huge space. So, it was very difficult to design. What I had was the basic space. What would be the realistic light there was for me to design. I had one source and had to make it look real. That required accentuation with support of other elements. Apart from the Molebeams, I had huge 20 by 40 skimmers with muslin and grid.

When you see the film you see that all the people in the hall are lit like that, which is only one side topped kind of thing. Because that is the only source, nothing else.

The song 'Tu hai' has another design. It is done around 'The Great Bath'. According to the brief, the full moon had to be there because narrative wise, the rituals start when the full moon comes up. So, I had to bring a moon up. Our base was eight feet higher from the studio level. From there we had two floors with pillars. Which were again touching my catwalk. So any light that I would put up, would be in the frame. So, I had to design in a way that I accommodate all of this and at the same time light up the place. It was a very tough lighting to do. I had two days to light the place. So, again I had only two sources of light – moonlight and the diyas. Now, the issue was that it was a set and almost 300 people were involved. So using so many diyas was a huge safety risk. It could invite fire. And safety was paramount.

Keeping safety in mind, we got a huge roll of red colored strip lights. These strip lights are what you see on highways when there is any road work happening. So on every set floor we put those strip lights and prepared an evacuation plan. It was pretty much like an aircraft evacuation plan. I made evacuation pathways. The strips had a separate connection because even if the key lights failed, the strip would still function. We had an independent generator for powering these strips. This is the level of work that has gone into working on this project.

The diyas in the foreground and the ones that were close to the camera were the real ones. But the ones that were in the background were electrically powered. That was again a result of several permutations and combinations. My gaffer worked almost three months to achieve it. We would order different kinds of materials to Bhuj and then test them. But nothing looked authentic. Either the movement wasn't correct or you could see the filament or the size of the diya was off. Finally, one thing struck me. I used Chinese rice bulbs in a particular cluster and colored them. I then connected them with the DMX control and they started working. Now the issue was that all the diyas couldn't flicker at the same time. There were lakhs of diyas and each one could not be connected separately. So, I did a sampling on how many could be connected together. As per the sampling we created bunches of clusters and put each cluster some distance away from the previous one. An algorithm was worked out and we achieved a look where it looks like all the diyas are flickering separately and it all looks real. Just imagine the kind of wiring that goes into that! It is a huge electrical mechanism that we worked out. And I had assigned a special team for this.

Still from the song 'Tu Hai'

What camera did you shoot the film on? Was it a single camera or a multi-camera setup? Talk about the lenses and the rigs you used.

This is my first digital film! Till PK, I shot all my features only on celluloid. But I have been shooting advertisements digitally for many years and so was familiar with Red and ALEXA. But this time I decided to go with the Sony F65. A film like this needs a different preparation. And this was the first time that was I using this camera. But in my research that camera was the best digital camera to support a film like this. This camera has a bigger sensor and a different way of recording an image. The camera is much more solid and doesn't have too many flimsy buttons. It is like film. It does not have too many things that you can manipulate with. Your lighting and exposure has to be correct for your image to be correct, period!

The film has been selected for Locarno film festival and if you know about the festival then you know the kind of scale that I am talking about. The image should have strength to enlarge to that extent. My blacks and whites have to be superb to hold it. Otherwise it won't work. Not that I knew that this is going to happen. But the kind of film that we were doing I was very clear that I want to have the best image density. The information had to be exact. That is where I decided to use this camera.

I went and sat at the Sony office with Sundaresan who runs it. He is a DoP himself and a dear friend who gave a detailed download about the difference between F65 and other cameras. I took the camera with two sets of lenses, the Cook 5/i Series and Arri Master Prime series and went to the set for a test shoot. I asked the production guy for the same set of colors and costumes that were to be used in the film. They got a set of costumes and five actors for this test shoot. I shot the actors in the costumes at different locations. I then put the footage on my DI setup and watched it on-screen with my colourist and discussed about the highlights, as to where it is going, whether it is holding, can I use the sunlight and deeper shadows in the same frame etc. I had to research because it is my first digital film. I have done lots of ads but that is all for small screens. This was to be projected on big screens. So, I had to go through that learning process all over again.

I chose shooting with a two camera setup throughout. I zeroed on the Cook 5/i series because of certain aspects that I liked about the lens set. In sequences where there were action and stunts we required more cameras. For that I used Sony F55. These are smaller cameras and are easy to use for handhelds and steadicam. The biggest problem I encountered in shooting was the heat of the camera. The camera would switch off. F65 did not switch off in normal heat situations. But during rain sequences the camera started heating because of the plastic packing and would eventually switch off. So I had to find a way out because we could not just go with all these delays. So, finally I sat again on my experiment bench and started figuring out a method to cool the camera. Lots of permutations and combinations were tried. One such method was putting a long pipe to the camera on the Jimmy Jib and putting an air conditioner on the other end of the pipe. But most of the methods crumbled. Finally, a suit was tailor-made using plastic. It had pockets for cards. It had two fans inside, one to pump air in and one to push out. These fans worked on battery that powered them for many hours. So, it was like designing costumes for the camera (Laughs).

Vishnu handled the grip. He is one of the most equipped grips that I have ever worked with. And it is so because grips normally work with things that are available in the market. They will have a panther, a crane and truck loaded with equipment. But this guy was different. He had all this, but along with it, he had a lot of other things. He would make me platforms that one can only dream of. His improvisations were fast and sturdy. He was equipped with pipes and platforms which could be easily rigged and linked anywhere.

I had to research because it is my first digital film

Your views on DI of the film

No film comes to its completion without the DI process. I use the coloring process as a creative tool rather than a correcting tool. Makarand Surte was my colorist. This is my third film with him as a colorist. We enjoyed the process and he is very hard-working. We created two different looks for the Mohenjo Daro portion with the flow of the story. The tones which Makarand came up with were exactly the ones that I had in my mind when I was shooting the scenes. Salil and his team from Prime Focus worked day and night to help us with the process and to come up with the DCP.

Please talk about your camera team. Your focus puller, gaffers and light boys. Was it a new team or does your team remain constant for all films?

It is my old team. These are the people whom I am comfortable working with. They understand my style of working and are in sync with it. My 1st AC was Shreya Gupta. She was my 2nd AC in PK. She handled my lighting and coordinated with gaffer and his team. Satish R Parpally was my focus puller. He has been with me longer than what I can remember. He is one of the best focus pullers that I have seen in the industry. Hrithik would come up and say, "Yaar tera kaam kamaal ka hai" (Brother, you are too good at your job). I can't remember ever taking a retake because of a focus issue. This camera that we worked on is a very unforgiving camera. Its focus is so sharp that even if you are a millimeter off the mark, it shows. Other cameras have tolerance. This doesn't have. You end up shooting at a very low light because you are shooting with things like diyas. You cannot shoot at a higher aperture. At that aperture, at a 75mm lens, it is very tough to pull focus. It is almost impossible to do that. So, you must have a rhythm to it. At that stage it is not technical. It is more artistic. And Satish could anticipate the actors' movements. He was my second in charge. He would handle all the camera and equipment requirements.

Ramani Ranjan Das as the Associate Camera was my major support. He came on board as the 2nd unit. He was my assistant for many years but is now independently working. I called him on this film because I tune very well with him. He knows me from the last 15 years so when I brief him anything about the light design he instantly understands. He would come up with ideas as to what could be done. At times, I would leave him on a different location so that we could save time. He practically worked as an associate with me.

Sameer Jagdale was my second AC. He handled the department of experimenting with the lights and creating improvised lighting setups for me. My Gaffer is Raz from Light & Light. I have worked with Light and Light before. They have been a very strong support. Overall, I had a wonderful set of people working in my team.

