

A “new” Abi
Report on the Abi operation
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At the beginning of September 2013 we became for the first time fully aware of the urgent need to find a more permanent solution for the Abi covering system. Until that moment in fact, this was protected in like fashion as the rest of the palace, with a curved metal structure, dome-shaped, covered by a layer of tarp. However, because of its peculiar shape and its height, the covering constantly suffered damages due to the wind and heavy rains, which tore off the textile so severely that often the workmen had to use pieces of old fabric to cover the big holes or, in some extreme circumstances when the wind was particularly strong, could not find any better solution than removing the tarp completely, thus leaving the Abi uncovered. The possible strategies were discussed on September, 3rd by Prof. Buccellati and Stefania Ermidoro, and only three days later local workmen were also consulted on this topic, thanks to the mediation of Hiba Qassar.

Four possible solutions were identified in this first phase:

- 1- Buy a new curtain to use on the same metal frame that had been in use in the past years, but cover it with mud plaster, in order to preserve it from atmospheric agents and to avoid the damages caused by water and wind. This would have been the least expensive solution, and it would have maintained the dome-shaped structure which, according to our reconstruction, was atop the Abi in old times (thus giving to modern visitors a clear perception of how it looked like in the past). Moreover, the final result would have been very similar to the rest of the covering system of the Palace. This option had the weakness, however, of being once again only temporary, in need of constant maintenance since the natural elements used to cover the curtain could deteriorate very rapidly; in addition, we were not sure if mud plaster could be applied to such a curved surface.
- 2- Take the semi-circular metal structure off and cover the Abi with metal plates that had been used in the past for various ad hoc equipment on the excavations, and that possibly were still on the site ready for the workmen to use. The metal sheets would have to be covered in plaster, in order to avoid rusting and water seepage during the rainy season, or on the contrary, over-heating inside the Abi during the hot months. In this case, the perception of the original shape of the structure would have been lost, but the materials used would have been more long-lasting and they were already *in situ*, thus providing a quick and almost inexpensive solution to the problem.
- 3- If the metal plates for the option discussed above were not available any more, wooden beams could have been used in a similar manner, covering the circular perimeter of the Abi. This would have been a more natural solution and would have avoided over-heating inside the structure; wood is however more vulnerable to water and humidity, and there was the possibility that it could often need replacement. Moreover, given the difficult political and social situation in the country during the Fall 2013, wood was also quite expensive and hard to find.
- 4- The last possible option that we considered was to cover all the Abi dome with metal sheets, as light as possible, so that the complete structure could still be moved without too much difficulty. This structure would then be plastered, or painted in the same color as the Palace bricks, in order to protect it against rust, to avoid over-heating, and so that it would as unobtrusive as possible in the general landscape. This would have been the most expensive solution because of the materials used and the need of hiring a professional to perform the task; however, it had the advantage of being the most long-lasting one, and of preserving at the same time the original shape of the covering of the Abi.

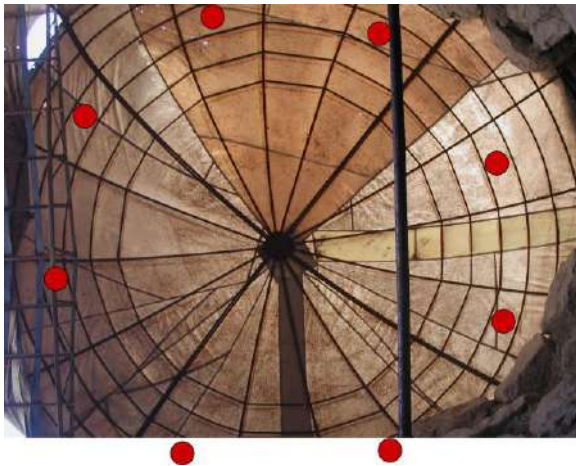
This last solution appeared since the beginning as the most preferable, because it would have ensured the best protection to the Abi and at the same time it would have been easier and cheaper to

maintain in future years, even without the presence of expedition staff on the site. A few issues needed however to be discussed with **Sabah Khasseem**, the smith who had worked with Prof. Buccellati in Mozan in the past, contributing to the developing of excavations tools and to the improvement of the structures used within the context of the Conservation Project.

We needed to be sure that the metal sheets were light enough to ensure the removal of the complete dome when necessary (possibly with the use of handles, to be placed at the bottom of the structure). Some light needed to reach the inside of the Abi, therefore we considered the installation of some glass or plexiglass panels at the base, that could if necessary also be removed to allow for ventilation in summer.

Almost a month passed between this first planning phase and the beginning of the work: this delay was due to various reasons. First, the respect of the Eid and the festivities connected with the end of the Ramadan, which kept our workmen at home, celebrating with their families. In addition, telephonic lines in Syria were often not working, and this made it hard to contact Sabah Khasseem in order to plan the job and to give him instructions for the beginning of the work.

Finally, in the last week of October everything was ready, and the project had been discussed both in its practical and economical terms (concerning the costs for the materials and for the labor); moreover, **Diadin XXX** had been contacted in order to ensure a full photographic coverage of all the phases of the work. We wanted in fact to have a good perception, even at a distance, of the Abi as it was before the beginning of the work; of the work while executed by Sabah Khasseem; and obviously also of the final structure, both *in situ* and in detail. Moreover, we asked the smith to compile a sort of write-up of the days in Mozan, thus providing at the end a report of his job. Moreover, Professor Buccellati sent him a drawing of the project as it has been discussed in the previous weeks, to make sure that the final result agreed with the discussed design.



Sketches with the indication of the openings to be created in the new metal dome for aeration and light inside the Abi

Unfortunately, some problems with the bank in Qamishli connected with the money transfer and the telephone lines, which were often broken and impeded thus fast communication to Syria, delayed again the beginning of the job, which then started only December, 3rd (the first shot taken this day can be found here below).



Once started, the job went very fast: workmen were able to get the material in only one day, and they created the basic metal structure in less than one week. Unfortunately, we did not get a complete day-to-day photographic report as we would have wanted, mostly because of the difficulties in driving from Mozan to Qamishli during the winter. We got,

however, a few shots of Sabah working and of the metal dome “under construction”.

Hiba Qassar was able to speak with Sabah on the phone while he was working on the structure and we could thus get a hint of the progress of his work. He initially suggested that, having bought a type of metal which was already in a light color, he could avoid painting it on its whole surface: he decided instead to paint only the base with pitch - on those parts of the structure that would have been covered again with soil, as shown in the photo on the right.



Having discussed with **Mohammed Omo** the project, the smith initially decided to use only metal for the dome, adding openings for the ventilation inside the Abi but not including thus the transparent panels that were included in the project. Thanks to the constant communication that we had started with him through internet and the telephone, it was possible to stress the importance of having some light inside the Abi, and he changed the structure accordingly.



Sabah Khasseem at work (left) and detail of the openings at the base of the new Abi “dome”

On December, 9 workmen had to interrupt their work because of the weather: cold and snow disturbed so much that Sabah preferred to cover the structure with plastic sheets and wait a couple of weeks before coming back to Mozan, to complete his task.

A “New” Abi..... The second round

After stopping for a while because of the bad weather conditions, the work on the Dome of the Abi was proceeded in June 2014. The dome was completed and, the metal structure of the dome is now covered with the metal sheets.

It was stressed earlier, the importance of leaving ventilation openings in the dome to prevent overheating and to allow some light inside the Abi. Therefore, 3 small openings were left at the bottom of dome on the southern side and southern western side. The openings are rectangular in shape, and covered by a metal net to prevent the anything from entering into the Abi.

The openings were placed so that they are directly under one piece of the metal sheets, and they are designed to be smaller than the base of the metal sheet. This was done for a reason. As you can see in the photo, the bottom end of the metal sheet right above the opening is tilted upwards forming a small drain, where rain water will be gathered and seep from the sides of the “drain” away from the opening, preventing thusly the water from leaking into the Abi.



Figure 1 Photo showing the openings and the drains above the openings

The metal sheets of the dome were placed in an overlapping method, and held together with screws. Although it's a very secure structure, but there were still some spaces between each tow metal sheets. So the final step in this phase of work was filling those gaps with silicon, which ensured maximum protection from the rain and dirt.

The second phase was the covering of the dome itself. There has been some experimenting regarding this matter. The aim was to, first, prevent the forming of rust on the metal sheets, and minimize the effect of weather conditions, and second, to provide the dome with a more natural look that blends with the surrounding monuments of the palace and the whole site.

The workers experimented with two methods. One is covering the dome with adhesive and then put dirt on the adhesive. And the second method is to cover the dome with adhesive and place burlap on it. This was done in June 2014. Eventually, the covering of the dome took place in March 2015.



Figure 2 Showing the covering of half the dome with dirt and the experiment with burlap

The dome was covered using the two methods. They covered half with dirt, and the other half with the burlap. Both methods seem to give the dome a very natural look and make's it unobtrusive to its surrounding. But later, we asked each one of the workers who were involved



in this procedure about his opinion regarding the best solution on this matter. They all prefer covering the dome with burlap. Because the dirt might cause the forming of rust on the long run, and might not endure the heavy rainy seasons.

For now, the Abi is well protected. And we will cover the entire dome with burlap at some point.

Rewinding to December 2014. The metal sheet dome is complete. And the base of the dome is covered with dirt to ensure that nothing can seep inside. It was time to turn the attention to the entrance of the Abi.

The roof (top) of the entrance, is covered with a grid like metal frame that consists of two identical parts, covered with tent fabric, on top of which a layer of dirt, then fabric then a plastic cover. The sides are covered using the same method used for the palace walls, which is draping curtains protecting all that lies behind it.

Now the metal frame has suffered recently from a breakage due to weather conditions (especially snow), plus it was dented in several places and needed welding and maintenance to ensure full protection of the Abi.



The workers took some emergency measures to stop the seeping water, by placing a nylon piece in the brakeage location. But the frame could not be left without a serious intervention.

The suggestion was to place metal sheets on top of the grid like metal frame. This would ensure maximum protection, and it would be a long lasting solution.

The workers started with project on the 4th o December 2014. And they began by removing the plastic cover and fabric. Then they removed the dirt. After that they removed the fabric that was underneath the dirt, hence exposing the metal frame. At this point it's important to point that the metal frame rests on dirt bags placed on the edge of the entrance top, which rests in turn on metal boxes, and does not touch any part of the original stone.

The workers removed the metal frame. The dented parts were straightened using a hammer. This metal frame has the shape of a triangular house roof, so a supporting bar was placed in the middle and was welded to provide extra stability and support. This bar was placed at the central top point of the top (as shown in the photo-middle), and extended to the tow bases. Then, this part of the metal frame was covered with metal sheets that were screwed into the metal frame, and it was placed back where it was, partly beneath the dome. A small sheet to interlace it with ensure that it is as close as to leave minimum space the entrance frame. later covered with metal



opening was made in the metal the metal frame of the dome, to possible to it, and in an attempt between the dome frame and Whatever opening left, it was sheets and dirt.



Figure 3 showing the different stages of work

The same was done to the second part of the metal frame. It was fixed and welded and placed back where it was, and covered with metal sheets. The metal sheets were placed in an overlapping method, and screwed into the metal frame. Those metal sheets were brought longer than the metal frame. The extras on both edges were not removed, but instead they were bent to form a drainage, lower than the metal frame, so water wouldn't gather on the sides, but rather slide into that drainage that leads it away from the Abi.

All the curtains on the sides of the entrance and on the façade and doorway were replaced with new one.

The Abi is now “NEW” and ready to face many more years, standing it ground as it always has.



Follow up

Our care and attention to the Abi, did not stop after the completion of its restoration.

In 2014 and 2015 the dome of the Abi and the roof of the entrance were covered with overlapping metal sheets. The last stage of the restoration process, was the covering of the Abi dome. We experimented with 2 methods. We covered half of the dome with glue and burlap, and the other half was covered with glue and dirt.



Abi dome after restoration in March 2015



Torn burlap- Abi dome
April 2016

The covering of the Abi dome was meant to serve 2 purposes. It was meant to prevent the formation of rust on the metal, and to make the dome less obtrusive to the surrounding landscape. These 2 methods made the dome of the Abi look like a part of its surrounding, but did not prove very durable.



November 2016



April 2017

By the end of the winter in 2017, the dirt was washed away, and the burlap was torn and needed to be replaced. So we thought about trying a different method: Paint!

So in the beginning of July, our friends in Mozan consulted with a paint store, who advised them about color blending, so we would have a sandy color and the right consistency.

Paint, brushes and all the required equipment were bought from a local store, and the work began.

Process

The first step was to remove and clean the dirt that was still stuck on the dome, and to scrape off what is left of the burlap and glue.



Cleaning the Abi dome before painting-
July 2017



Once the Abi was cleaned, our friends mixed the paint and began painting.

This task took 3 days to be finished, painting the dome with layers of rose-beige paint.



Positive aspects



Final results- July 2017

We are hoping that this method would be effective, and that it would prevent the metal from rust and damages. We also hope that it would be durable solution that does not require constant repairing.

Negative aspect

The negative aspect so far is an esthetic aspect. Even though the color is close to the color of the surrounding landscape, the dome does have a metal shining that is not completely coherent with the site. But it is something that can be overlooked, if the safety of the Abi is ensured with this method.



Shiny metal