



An Exhibit of Digital Rollouts of Maya Vases From the Museo Popol Vuh, Universidad Francisco Marroquin Guatemala



(Left) Maya vase with margay spots pattern. (Right) resulting rollout by Dr. Nicholas Hellmuth

Abstract

An artifact exists only in its museum. To learn from this artifact, it is necessary to have a physical copy, or a photograph. For students and scholars to be able to seriously study the artifact, the photographs have to be a sufficient quality. This is the role and goal of FLAAR, to assist in providing help and know-how so that museums and researchers in the field can have the absolute highest quality photographic resources. FLAAR dedicated 30 years to fulfilling these goals with the cameras which were available in the 1970's and 1980's. By 1995 FLAAR was among the highest quality archaeology photography institute, using both 8x10, 4x5, Hasselblad for medium format, Leica and Nikon for 35mm.



Inkjet enlargements of rollout photography of Mayan vases at BGSU FLAAR facilities

Then came digital cameras. The costs were out of reach; the technology at the beginning was daunting. Thanks to generous donations in 1995 through 1997 it was possible to lay the groundwork for FLAAR to transit from analog darkroom photography into what has developed into the new millennium of digital photography.

When we returned from the Japanese National Museum of Ethnology with our first digital photographs, we had the need to print them, also digitally.

At this point it was possible to receive a donation of a \$19,000 Dicommed digital camera from Better-Light. This camera could produce a file of about 120 MB in normal mode and several hundred MB in panoramic or rollout mode. With the increased capabilities in digital camera technology it became essential to have printers capable of handling the superb quality.

Encad, at that time the leading manufacturer of large format inkjet printers, provided a 36" printer to FLAAR so that we could experiment with printing the large files of archaeological artifacts that we had acquired during a field trip to Guatemala and Honduras in the late 1990's.

The first prints which resulted were, to us, awesome in their quality. We used these prints as show-and-tell visual aids in the last two years that it was possible to have a Maya symposium at Brevard Community College in Florida, before the new college president switched its focus from international multi-cultural affairs to local county and local city events.

So FLAAR moved its office back to Guatemala, where we had maintained an office for several decades. We moved the Encad printer there as well; it still worked just fine. We moved the digital rollout camera to Guatemala too and actually acquired a newer model, another \$20,000, the most sophisticated rollout camera in the world.

As the years went on Hewlett-Packard donated first one, then a second wide format printer to FLAAR. So now we had higher quality printers than the original Encad. This new printer made it possible to print rollouts of Maya vases at museum quality. So we thought, why don't we do an exhibit of the enlargements.

Deciding which Printer to use

The prints had to be of the highest quality as the 400 guests and functionaries of the Museum and adjoining University were going to be examining the prints at ranges of 2 to 3 feet.

People who are about to decide which printer to select often ask whether a particular brand can produce museum quality images. Actually thousands of people a month come to the FLAAR websites seeking tips and help for which printer, inks, or paper to select.

The art exhibit of wide format inkjet prints of ancient Maya art offered a great test for writing evaluations on the printer and inkjet paper.

All the museum goers would inspect every inkjet print and would immediately complain if the images did not meet professional standards of excellence.

There are two museums on our campus, so we have plenty of experience with the kinds of prints that museum curators wish to exhibit. Additional experience in the world of art results because the FLAAR director has a PhD in art history from a European university in addition to an undergraduate degree from Harvard plus having held two Visiting Fellow positions at Yale's Dept. of History of Art. So he has a critical eye with respect to what is acceptable to display in a museum exhibit.

The Popol Vuh Museum is in the forefront of Latin American museums in exhibiting inkjet prints. This particular exhibit opened with a reception on the evening of July 18th, 2001.

This exhibit presents high-resolution photographs of ancient Maya pottery from the collections of this museum. The circumference of the ceramics is photographed by a special "rollout camera" which rotates the pottery and scans the circumference pixel by pixel.

These images are exhibited at an enlargement of 48 inches in width. If the rollout photographs had been taken with traditional film, such as 120, 220 roll film, or 70mm size, it would not have been possible to enlarge them to 48 inch size. The problem is not in the film but that rollout cameras which use film have no computer to control all the pertinent factors hence are not accurate enough to produce an image capable of being enlarged. For information on what is a rollout camera, see descriptions of rollout cameras on www.digital-photography.org and www.cameras-scanners-flaar.org for more information).

The camera is a BetterLight scan back which offers an impressive resolution. The rollout photographs are about 150 to 320 MB in size. Since we were printing at a rather small size (48 inches) we could do quite well with about 50 MB. The larger rollouts will easily print up to 15 feet long, but the exhibit panels in the museum accepted only 48 inch images.



The reason it was crucial to find a printer that could reproduce fine detail was because the camera that took the original photographs was a large format digital scanning back. This captures an image about 6000 x 8000 pixels (multiple times better quality than a mere megapixel camera).



The Popol Vuh Museum

Exhibit of Digital Rollouts of Maya Vases

The question was what printer to use for the exhibit? At the university itself (where the museum is located) FLAAR had an Epson 7500, Hewlett-Packard DesignJet 1055cm, HP DesignJet 800ps, and an Encad NovaJet Pro 36". The Encad accepts pigmented inks, but its 300 dpi resolution is not really good enough for museum exhibits in a situation where people will scrutinize the images. The grainy dot pattern of the Lexmark heads used by Encad printers would be too visible. That would hold true for the Encad models up to the 800, which is about as good as the last generation of HP, their DesignJet 2000 and 3000 series. No Encad can yet match the quality of the newer HP 5000.



View inside the Museo Popol Vuh showing a portion of the exhibit of inkjet prints.

At FLAAR's office at the university in Ohio we have a Hewlett-Packard DesignJet 5000ps, another Epson 7500, and a newly installed ColorSpan DisplayMaker XII. Since FLAAR is considered the #1 source for documentation on wide format printing, FLAAR can select just about any printer it wants. Thus it might be interesting to learn which printers were chosen to print this exhibit. It's also noteworthy to learn which printers were not selected, and why.



Printing a 9 foot long exhibit print on cotton from 3P Inkjet Textiles on the HP 5000ps with UV pigmented inks, FLAAR studio on the campus of BGSU.

The Epson at the university in Ohio has severe metamerism problem, so we did not want to risk having the entire exhibit turn some ugly color. Epson quality was very tempting, but worry about possible severe metamerism problems in addition to the slow speed was a deciding factor. The special 5000k lighting required to avoid metamerism from Epson prints, which would have far exceeded the exhibit's budget. To avoid fading Epson prints may require a closed atmosphere, having the print sealed in UV glass. Furthermore the Epson printer in Latin America had a severe banding problem and tended to drop colors (a color will simply cease to print due to severe head clogging). In both cases it used Epson inks and Epson media.

The HP 1055 and 800ps don't have pigmented inks at all, so that rules them out because in Guatemala there is lots of tropical sun shining in the windows. Both have banding problems; the HP 800 on cyan. It is possible banding was caused by extreme humidity as well.

If we had needed larger images such as 72" in width I would have selected the ColorSpan DisplayMaker XII but 60" width on the Hewlett-Packard was plenty. Actually most images were printed on 48" media.

The Hewlett Packard had the advantage of printing quickly, being easy to use, and offered 1200 x 600 dpi quality of color with UV pigmented inks for longevity without having to put glass over the photos. Six foot sheets of glass over 50 photos would have been both physically awkward as well as needlessly expensive. The only slowdown was the on-board RIP software on the HP printer (of which there are other faster options available, such as PosterJet RIP software which we installed subsequently).

Figuring out which Inkjet Media to Use

ColorDNA donated a set of ink for the HP 5000; IJ Technologies donated the media; 3P Inkjet Textiles in Germany donated inkjet fabric; and TAL (another European company) donated the polyester material we needed to show off the diversity of the printer's capabilities.

We also had a complete selection of Hewlett-Packard media kindly provided by HP. The advantage of using this would be the ICC color profiles are already built into the "ps" software onboard the printer. However we needed media close to 48 inches. IJ Technologies cut down a roll to our precise measurements, so we went ahead and used it without any ICC profiles. We did the printing with the original sensors, which were heavy on the yellow, so we simply tuned down the yellow in Adobe Photoshop. Hewlett-Packard came out with a fix for that subsequently, and now we have the newer color sensors so don't have to tweak the images as much in software. If you know how to handle Adobe Photoshop it's easy to get around most glitches of this nature.

The media donated by IJ Technologies was water-resistant, part of their Dura series of media. It was a thin material with a wonderful surface. Everyone who felt the media with their hands said it was among the finest surface they had felt. We subsequently found that the media could not accept spray lacquer (for a form of liquid lamination that the museum exhibit mounting company uses instead of roll-fed laminate). The chemicals in lacquer attacked the chemicals in the synthetic media causing the media to shrivel and shrink. However if you don't attempt to apply lacquer, the Dura media is wonderful.

It turned out that the lack of lamination was a blessing. The original objects were ceramic, hence naturally had a sort of rough ceramic surface. The museum curator stated that glossy lamination was too artificial. One of the members of the museum's board of directors also indicated that the laminated images looked fake because they were too shiny. Since the media was water-resistant, we decided to show the prints raw, with no lamination.



Print from the ColorSpan DisplayMaker XII. It lasted in our office less than an hour, because the Vice-Rector saw it being unpacked from the framing shop, and asked if it could be hung in his office in the university's main administration building.



Prints from the Epson 7500 are also museum quality, unless you use the wrong media. It's hard to find after-market media for the proprietary Epson inks. So one set of prints had to be thrown away.

If we had used the Epson printer with its encapsulated resin inks, it would not have been possible to use the media that we had. Also, Epson warns even in its alluring ads that some of its media may not hold up. Ozone, cigarette smoke, and other ingredients in the atmosphere in our modern cities tend to destroy some Epson inkjet media unless you use UV glass and also seal the image completely from the atmosphere.

It would have cost thousands and thousands of dollars to seal the prints and frame them in glass. There would have been no way to transport these images due to breakage of the glass. Besides, the lighting in the museum would have to be torn out and new lighting installed. That is because prints from the Epson 7500, 9500, and presumably also the 10000 have to be viewed under special lighting at 5000K color temperature.

The room where we exhibited the prints is completely open on one side to sunlight. On the other side it's all fluorescent lighting. If a metamerism reaction had happened because we used Epson inks, half the images in the exhibit might have looked one color, yet the images on the other half of the room may have looked another color. Of course there would be no way to know which specific metamerism reaction would happen, but the professor of printing at our university said that his prints from his Epson 7500 "turned colors almost as he carried them from room to room." That was again because some rooms have lots of sunlight; other rooms have only office lighting. Kind of unrealistic to expect the entire university to tear out its lighting and install 5000K lighting fixtures.

So in effect doing this exhibit allows us to show how the years of digital imaging practice has been essential so that we can first, learn how to handle digital hardware and software ourselves, and second, so we have the experience so we can speak with authority when we go out to help other museums, art historians, and photographers who might like to learn which printer and which inkjet paper is recommendable.

Considerations

The curator and members of the museum's Board of Directors have definite opinions about the quality of images they will accept. Two years ago we presented the museum a print from a Mimaki printer. They said it was so ugly that they did not want it. This was because the image was several meters long and hence would have taken several hours to print on any piezo system using Epson printheads (which would mean any Roland, Mutoh, Mimaki, or Epson printer). So the Mimaki printer had to be set at 360 dpi in order to finish the print in under multiple hours (this test was made at DRUPA or CeBIT trade show in Germany). If the print had been made at 720 dpi, it would have been just fine.

Since the museum people were picky, as you would expect (actually as they ought to be, since a museum should show quality work), that sort of rules out even the newer Encads. Their inkjet dot pattern is sometimes rather obvious. But since we did not have an Encad 850 that rules out the possibility anyway.

Any piezo printer would have been too slow to print the almost 60 images. The exhibit never would have happened if we had attempted to use a Roland. Here the Hewlett-Packard was a tremendous advantage. The only slowdown was the poky RIP; in the future we would have wished a RIP such as the PosterJet.

FLAAR also has installed an exhibit in its own offices. We have a giant mural-sized print from the HP 5000; two prints from our HP 1055 (the images of indigenous Maya textiles of Guatemala); and will install two prints from the 8-color ColorSpan which we did several years ago at Ilford's office in Frankfurt, Germany (Ilford used to sell ColorSpan printers). The ColorSpan images have the richest colors, the most impressive depth of color. The prints will be mounted next week and future updates of this report will include them as well.

Conclusions

An Iris printer would have done high quality but back in 2001 we did not yet have one (due to its obvious cost). Besides, we did not need watercolor paper. Also, we were not selling the prints. Today we have an Iris 3047 giclee printer, but the cost of paper and expense of operating this complex printer makes it a labor-intensive machine.

A Mutoh or Epson could also have produced the exhibit in outstanding quality. But we did not have time to wait for the slow output from piezo heads, nor could we risk having banding. Our Epson has a habit of dropping out colors as well, plus the risk of metamerism.

Today, in 2005, a 12-color Roland with ErgoSoft RIP, an 8-color Mimaki JV22 with ErgoSoft RIP, or the Canon image PROGRAF W8400 would produce museum-like quality, as would an HP Designjet 130.

Back in 2001, a ColorSpan would have been an excellent choice, especially for mural sized images, but it turned out that the Hewlett-Packard DesignJet 5000 worked just fine. Since the images show a thousand-year old ceramic with a rough surface, 600 dpi and a grainy dithering pattern are acceptable. Indeed the Rector of a nearby university liked the exhibit so much he facilitated the exhibit to move to his university. This university president was formerly the President of the Museo Popol Vuh (where FLAAR is located), so he knows museum quality photographic prints when he sees them. Plus his brother is the leading professional photographer in the country. This is the kind of jury that judged FLAAR had made the right selection when we opted for the HP printer to do the whole show.



The Popol Vuh Museum has one of the largest collections of 4th-9th century Maya funerary ceramic art in the world. The FLAAR Photo Archive has photographed about 45% of the collection over the last 30 years.



At left is the 9th century vase in the museum; in the middle, the rollout being mounted. At the right, a close-up of the inkjet print now part of the permanent exhibit of the museum.

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The selection of the HP 5000 turned out to be a good one in terms of the day to day production of the prints. The students learned how to use the printer in about half an hour. Although the onboard "ps" RIP was slow, the print speed itself was fast once the system received the RIPed image. The mural-sized images we RIPed and printed at night. The finished images were waiting for us all nicely done the next morning. The HP 5000 does just fine printing unattended over night. Actually we could have checked on the progress of the print over the Internet since the printer has an Internet connection. You check on the printer from home if you need to.

The finished prints actually exceeded our expectations in terms of quality. The BetterLight digital camera has such a high quality of photography that the TIF files were filled with data. People who saw the exhibit said the images were so detailed you could see the pores of the ceramic. Some viewers wanted to run their hands over the surface of the print to see if they could feel the pottery, it was so life-like.

Keep in mind that the division which produces the wide format inkjet printers for Hewlett-Packard is distinct from the other HP divisions. Hewlett-Packard large format printer division is in Barcelona, Spain. So the printers is international, with printheads designed in the USA and the overall machine designed with European precision. Barcelona itself is a center of museums and ancient culture.

We would never have made the selection of this printer for this art exhibit if we felt the resultant prints would not pass muster. After all, over 400 evaluators saw the prints on opening night. Actually I suspect that hardly any of them realized they were looking at inkjet prints. Most felt the exhibit was the actual 8th century ceramic art, it was that lifelike.

Especially popular were the prints on cotton (from 3P Inkjet Textiles). Few people realized that the HP DesignJet 5000 could print just as well on cotton as it does on photo paper. Actually we could also have printed on metal foil if it had been an avant garde exhibit. We could also have printed on silk.

Learning from Experience

In the future we would use an aftermarket RIP for the HP 5000. PosterJet, Wasatch, or ErgoSoft or others would have been fine. The software RIPs could have made the RIP time faster.

As we gain more experience in using the ColorSpan DisplayMaker XII we will tend to use this printer more often. The output is of outstanding quality if you need a print 72-inches wide.



If the museum visitors had found the prints defaced with micro-banding tracks, with dotty-grainy inkjet spots, or with any defect whatsoever, there would have been a riot. Yet the viewers were estatic at the quality. So we had a jury of about 400 people that one night. Now you can understand why we are content with the printer that made this museum exhibit a success, the HP DesignJet 5000ps.

We would consider using an Epson 9800 in the future but only if we can personally document that this printer can avoid banding defects. The newer software updates have eliminated the banding we noticed at CeBIT trade show where the printer was first presented in Germany. The Epson 10600 is not as slow as its earlier piezo forbearers. The Epson 10600 is less prone to metamerism problems as well. Since we do not have an Epson 10000 in our arsenal we depend on feedback from end users. So far the feedback has discussed excessive ink usage and banding. As that printer matures (as software tweaks and hardware modifications are added) we will update our reports. All printers mature over time.

In the meantime we are quite content with our HP 5000 and ColorSpan printers.

Three years ago there was nothing on the horizon that would make us reprint the exhibit photos. Our HP 5000 will continue to do just as good a job next year as it already does this year. Same with the ColorSpan. Our ColorSpan prints will still evoke ooohs and aaahs from viewers next year.

But 2006, we expect that the newer generation of wide format printers will encourage us to take a second look, and for the next museum display, perhaps switch to the new technology. But in the meantime, even though today we have 23 wide format printers, we still use our HP 5000 every day. Have two of them now, a 42" model in Guatemala and a 60" model at Bowling Green State University. We also have a third, a 60" model 5500, the update to the 5000, albeit with identical printhead technology.

Summary

The HP DesignJet 5000 reproduced every nuance of the high dpi images from the large format BetterLight scan back. Ever pore in the ceramic surface, every feature of the paint or incision on the decorated surface, was faithfully reproduced.

The viewing distance was almost face to face, probably an average of 2 feet distance, at most 3 feet. The curator and Board of Directors were very proud of the exhibit, as was the photographer, Professor Hellmuth. The HP UV pigmented inks presented all the colors of the thousand-year old paints. Ceramics has a natural surface so there was no bothersome inkjet dot pattern that might have been noticeable with an Encad.

Not one of the hundreds and hundreds of guests make a single comment about anything they did not like. On the contrary, they loved the images. They all felt the ceramic was life-like, fully like the fired clay surface in real-life.

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Scrutiny from the museum goes (here the Vice-Rector of the university as well as member of the Board of Directors of the museum). You can be sure he would not accept a print for his museum if the quality was iffy.



Dozens and dozens of prints 48 inches wide. If there had been any faults such as banding paths, color drop-out from a clogged head, excessive grainy dot pattern, the exhibit would have been a public embarrassment. So we had to be sure to select a printer which could keep everyone happy, as well as stay within budget.

Thus it's kind of understandable why there is so little interest in tearing out the lighting to replace with 5000K lighting just because an unusual ink can't work in daylight. We were told of one exhibit from the Epson 9500 in California where the contract stipulated that the photographs could not be shown in any room except where illuminated with 5000K lighting fixtures.

There was no patience and actually no time anyway to wait forever for a piezo printer to have done all 60 prints. Two of the prints (on cotton) were about 11 feet long. That would have taken forever to print on a piezo printer, though we could have left them to print overnight.

In any event, neither of our two Epson 7500 printers could have handled the task. The ink costs on the Epson 10000 would have exceeded the entire budget of the museum for this exhibit. More than that, the cost of media on the Epson would have been unduly high because it would not have been possible to use all the media from after-market companies.

Event Schedule

Location	Date
Hotel Intercontinental	2001
Museo Popol Vuh	18 – July 2001
Universidad del Istmo	10- September 2001
Centro Cultural Metropolitano, Palacio Nacional de Correos	19 –October 2001
Universidad Rafael Landivar	5 – February 2002
Banco de Guatemala	25 – April 2002
Palacio Nacional de la Cultura	5 – September 2002
Museo Ixchel (textil exhibit)	4-28 September 2002
Centro de Formacion Cooperacion Española, AECl, Convento de Compañia de Jesus, Antigua Guatemala	28 – March 2003
Museo de la Universidad San Carlos	23 – April 2003
Distrito Cultural 4 grados norte	July 2003

Universidad del Istmo



Different views of FLAAR's Exhibit at Universidad del Istmo, Guatemala during the Architectural Week.

Postscript

The exhibit in the museum was so successful that one of the members of the Board of Directors asked that one wall in the museum building be turned into a permanent exhibit of the same images.

He said that the quality of the photographic reproductions was so good that he wanted the rest of the university community and distinguished guests from other countries to see samples of these photographs.

So back to setting up the exhibit just a week after it closed.

Again, everything had been printed at Bowling Green State University, in the FLAAR facility, with the HP 5000ps.

Pps

After we had set up the exhibit of the Hewlett-Packard prints, one of the ColorSpan prints arrived. We airfreight them from Ohio down to Central America. The DisplayMaker XII printer is a bit large to ship the printer itself to Guatemala.

The Vice-Rector of the university saw this ColorSpan print and immediately asked if he could have it for his office.

The difference between the ColorSpan print and the HP prints are in color depth. The ColorSpan has 12 colors with an apparent dpi of 1800 dpi. Quite frankly these ColorSpan prints are awesome. I have to grin whenever I hear a person who loves Epson prints say something derogatory about the ColorSpan. I understand their need to say that, after all, they sell Epson printers, Epson inks, Epson media. But if you show a piezo print next to a ColorSpan print, I bet the majority of viewers would prefer the ColorSpan print for its richness of color depth.

It is worth noting that the printheads used in the ColorSpan printers are basically the same thermal printhead design as used in the HP DesignJet printers. They all come from HP engineering labs. Thus the visual taste test, so to speak, documents that thermal printheads produce a quality which is appreciated by both museum visitors as well as the museum staff, who are even more demanding than the general public.

FLAAR does not sell anything. ColorSpan provides printers, Epson provides printers, and HP provides printers, so we have no vested interest whatsoever in one over the other. Our challenge is to provide the basic information so that the end user can make their own decision.

For many people, an Epson is what they want no matter what, and they will live with their choice. Many will get great prints and be very happy. The art department on our university gave up attempting to get usable prints with their Epson and is now filing a complaint with the reseller to get their money back. Of course that could happen with any brand of printer, but with them it was the Epson 9000.

For many people they need the 72" size, or the color depth that only 12 colors can give, or the speed that only a thermal printer can deliver. Their best choice is a ColorSpan. However if they don't clean and calibrate it, this printer will be as much a wrong choice as the Epson 9000 was for the art department (FLAAR is in the Technology Dept, not the art department).

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For most people, ease of use, widest range of available media, idiot-proof production, and the 1200 x 600 quality of outstanding color gamut of the UV pigmented inks will result in selecting the HP 5000. But the down side is that thick speciality art papers won't fit in the inflexible HP design. Also, no B+W quad-tone inks (but none in the Epson 10000 either). Only the ColorSpan can take B+W quad-tone ink set. That feature is being added later this year.



New permanent exhibit at the Popol Vuh Museum, all with HP 5000 UV pigmented inks.

But the exhibits in the Popol Vuh Museum, and especially the desire to make the exhibit permanent, is a testimonial to the quality that a HP 5000 can deliver.

Can an HP reseller show you this quality when you ask for a sample? Probably not. The reseller may have no idea how to print a giclee print. Besides, the original image may be improperly prepared in Adobe Photoshop. FLAAR gets museum quality because we use a BetterLight camera or CreoScitex EverSmart Supreme flatbed scanner. Hopefully we know how to prepare these in Adobe Photoshop.

So if you feed an HP an outstanding image, you can definitely get a photo-realistic museum quality result.

We like the HP 5000 and the ColorSpan Displaymaker XII because the prints are in such demand that we can barely keep people's hands off them. Not only the Vice Rector's office, but also the Board of Directors meeting room, and the Rector's office, all have fine art prints from FLAAR on their walls. Not one of these happens to be printed on an Epson piezo printer. Epson prints, with a printer that was properly maintained and calibrated, would surely have also produced museum-quality prints, but since each office and museum room has different lighting, we could not afford the risk of metamerism.

Other venues for the FLAAR art exhibit

Museo Ixchel



Dr Hellmuth inaugurates his exhibit of inkjet prints at Museo Ixchel, Guatemala

*Exhibit of Digital Rollouts of Maya Vases***Historic Cultural Center**

The FLAAR exhibit of HP5000 prints of Maya ceramic art also opened at the Historic Cultural Center in downtown Guatemala City. Several contemporary artists also presented their work in this exhibit. People were stunned by the inkjet technique used in the FLAAR prints, they said it was a great way to study Mayan art history, another person commented: "It was very interesting to see the Mayan vases in 2D or flat surfaces, they looked like an artistic piece, even though the art was achieved by the Mayan artisans'.



Here you can see the audience admiring the prints of the Mayan archaeological rollouts at the opening of the Historic Cultural Center, in Guatemala City.

Palacio Nacional de la Cultura**Universidad Rafael Landivar**

The larger images would have taken three or four hours to print and possibly longer to RIP. At 1440 dpi the file size would have croaked most computer systems. The HP thermal printheads need only 150 dpi at full size in Adobe Photoshop as a TIF format file to achieve 1200 x 600 dpi output quality. So again, another several hundred jurors judge the quality of the wide format inkjet prints produced in the FLAAR facilities. We selected a Hewlett-Packard DesignJet 5000ps in order to get the entire exhibit printed quickly enough. We simply did not have time to wait for a piezo printer to crank out one image every 1 or 2 hours.



Snapshots of the opening night exhibit called "Vision Digital de la Ceramica Maya" at Universidad Rafael Landivar, Guatemala City.

Acknowledgements

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Hewlett-Packard Large Format Division, Epson-America and Parrot Digigraphic, MacDermid ColorSpan, and Encad have all provided printers; TAL provided media. ColorDNA provided the ink. We thank Liz Gould, IJ Technologies, who provided the water resistant media; Thomas Poetz, 3P Inkjet Textiles, for the cotton. We thank Robert Eisfeld, president, PosterJet, for providing PosterJet RIP which will definitely speed up printing our next exhibit.

We thank the Board of Directors of the Museo Popol Vuh for permission to do the photography and we thank the staff of the museum for assisting in bringing the material out from storage and/or from exhibit.

Contact Information

If you also need to produce museum-quality exhibits, you might like to learn from our experiences by contacting the people who know digital imaging hard and software.

BetterLight: Michael Collette, e-mail: mike@betterlight.com

BulbMan: 800-648-1163, Fax: 800-548-6216, Foreign Sales Fax: 775-788-5657
e-mail bulbman@mindspring.com

Lowel Light Manufacturing: tel 1-800 334-3426, e-mail for equipment equipq@lowel.com, general questions info@lowel.com

Poster-Jet RIP: Ken@scarabgraphics.com

IJ Technologies: Elizabeth A. Gould, e-mail: liz@ijtechnologies.com, tel 1 800 (356-6962)

Ries Tripods: info@riestripod.com

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www.laser-printer-reviews.org	www.cameras-scanners-flaar.org	www.large-format-printers.org
www.FLAAR.org	www.ctpid.ufm.edu.gt	www.wide-format-printers.NET

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Views of the FLAAR photography studio in space kindly provided by the Museo Popol Vuh

Acquire these reports at:

www.wide-format-printers.net

Learn About Inkjet Media (paper, canvas, etc.)



Learn About the RIP Software that Runs Inkjet Printers



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