



Issue #19 - JQ9803

## User profile: Said Nuseibeh

### Putting my JOBO processor through its paces.

By the goodwill of the Jerusalem Awqaf<sup>1</sup>, the generous sponsorship of the Institute for Advanced Study and the Palestine Welfare Association, plus the grace of God, I was granted the honor of performing the first-ever, full-color photographic documentation of the original 7th-century Umayyad mosaics inside the Dome of the Rock. The Dome of the Rock is an octagonal Muslim shrine, built in the center of the main al-Aqsa mosque in Jerusalem by the ninth Caliph, Abd al-Malik bin Marwan, in 72 ah/692 ce. In addition to the mosaic

documentary work, this assignment afforded me the long-desired opportunity to photograph — with benefit of my full complement of lighting gear— aspects of Muslim culture, architecture, and the sacred that appear in this holy city.

In the course of this project, I used three different JOBO processors: The CPP-2, the Autolab (ATL) 1000, and the ATL-2 Plus. For years, I had been using the CPP-2, primarily for Ilfochrome/Ciba printing.

Then, while exposing the photographs on location, I was introduced to the simplicity of E-6 processing on the Autolab courtesy of a friend who invited me to develop a full set of films there in his darkroom in Jerusalem. The success of this hands-on experience strongly impressed me with the versatility and quality of the rotary-drum Jobo technology. Upon my return to the studio in San Francisco, I traded in the CPP-2 and purchased an ATL-2 Plus for the rest of the processing, realizing that the cost of the machine was equivalent to the funds budgeted for lab processing, and that this machine would free me from having to trundle around town from lab to lab.

The JOBO Autolab was instrumental in six phases of this project: Testing, exposing in the field, film development, book production, exhibit production, and finally, publicity and lecture slides.

### **TESTING**

Before arriving on location, I had tested and calibrated 11 color transparency emulsions at a fine local E-6 lab. When I began using the Autolab in Jerusalem, I double-checked, corrected, and adjusted my calibrations.

### **IMPLEMENTATION**

In the winter of 1992/93, I travelled to Jerusalem with seven cases of camera and lighting gear. This was not the first time that I had photographed in and around the al-Aqsa mosque; off and on for twenty years I had been making photographs in the vicinity. On this occasion, however, I was granted unprecedented access, purpose-built scaffolding, and the opportunity to bring in professional lighting. All told, I enthusiastically exposed \$6700 worth of 17 different film emulsions in order to produce 580 final photographs. This project spanned three months of non-stop photography in the winter of 1992/3 with an additional month in the summer of 1994. Naturally, and particularly for the mosaic survey, I bracketed generously.

For both color sheet and roll-film, I processed "one of everything" in the ATL-1000 with the Tetenal 3-step chemistry. Since this photographic opportunity was so rare, and since there would be little chance of mustering the funds and permissions to travel halfway around the globe again to make up for any mistakes, it was important that I finished with what I thought I had. Also, I have always been anxious about travelling internationally with unprocessed professional sheet film because it is so vulnerable; susceptible to damage, confiscation, and erasure. Light leaks, border soldiers, x-ray machines, or any of a multitude of other mishaps could have wasted my efforts and compromised a happy client. As Shakespeare wrote, "There's many a slip twixt the cup and the lip." So I stayed up late for many nights on location processing film on the JOBO, usually once or twice a week, so that I could have a complete set of films and the work would not be jeopardized by oversight or accident. This close-to-immediate feedback also helped reward and fuel my vision, which was becoming more and more ecstatic as the depth and breadth of the engagement increased.

Polaroids were invaluable, but even with their assistance, the Autolab was critical for providing on-site corroboration and insurance for an unrepeatabe project. In three instances, the ability to study the final chromes while still in the field enabled me to catch lapses of focus, to re-photograph before the opportunity vanished, and to modify my lighting or use alternate film emulsions for their different characteristics. The capability of accurate color testing in the field allowed me to experiment with the filtration of notoriously difficult sodium-vapor lights and ultimately to achieve a pleasing aesthetic balance.

## ***DEVELOPMENT***

Back in the studio, I acquired, integrated, and calibrated the ATL-2 Plus with the Tetenal 3-step (for color) and FG7 (for b&w) chemistries. Then the arduous but extremely gratifying experience began of processing the fruits of the photographic labor. I estimate that I processed over 1600 sheets of 4X5" and 450 rolls of 120 transparency film, plus 700 sheets of 4X5" and 190 rolls of 120 TMAX film.

The beauty of the JOBO was that I could tweak the processing from one bracket to another in the comfort of my own studio, only rarely facing the frustrations of rush-hour traffic and twiddling my thumbs in the car. There were, of course, complications and even mistakes, but JOBO tech support was responsive and competent to resolve everything that came up. For instance with the suggestion to install a bleeder valve to keep the water fully tempered. Other photographers with more experience were also generous with their counsel. Color negative films that I do not tweak in processing I sent out to a color lab, not because the JOBO could not handle it, but because I wanted all available time to fine-tune the chromes and the b&w negatives, and then to begin printing the art historical and research prints.

## ***BOOK PRODUCTION***

Two years after completing the initial photography, I signed a contract with Rizzoli International Publications in New York to produce a sumptuous photographic book on the Dome of the Rock and Masjid al-Aqsa, with subsequent arrangements for UK and French editions. Concurrently, my client and collaborator, Professor Oleg Grabar of the Institute for Advanced Study in Princeton, formerly the Aga Khan Chair at Harvard, began work on an academic volume with Princeton University Press for which he commissioned a set of digital composites of the Interior Octagonal Arcade mosaics.

With the JOBO, I first produced a set of 380 copy slides to facilitate the design of the Rizzoli book. Of these, 64 were reproductions of good fiber prints which I copied using two Lowel 1000W Tota-lights, Ektachrome tungsten film, and a macro lens. The remaining 320 slides were made in my darkroom from the original transparencies on an overturned dichroic colorhead. I attached a

35mm camera with macro lens to an enlarger stand, laid and leveled the colorhead on the baseboard face-up, rested the negative carrier on a jig directly atop the mixing chamber, and photographed the chromes one after another on 5071 dupe film.

As the book layout and design were being refined, I proceeded to make 139 4X5" duplicate transparencies for final reproduction. The dupe process proved to be too exacting for the Tetenal 3-step chemistry and I switched over to the more tedious but consistently reliable Tetenal 6-step chemistry.

Upon delivery of the final dupe films, prints, caption info, essays, and translation texts to Rizzoli, I began work on the digital composites for the Princeton book. Three months later —and after being rescued with a CPU upgrade loaner from Apple Computer— I produced eight 4X10" transparencies for four-color reproduction. From these I made Ilfochrome/Ciba proofs in the JOBO for layout, portfolio, exhibit, and sale.

## ***EXHIBIT PRODUCTION***

Before fulfillment of my responsibilities to the publishers, I began production of editioned Ilfochrome/Ciba photographic prints in my JOBO Autolab, utilizing the P-3 process.

In July 1994, I had a small exhibit of sixteen 16X20" Ilfochrome/Ciba prints at a cultural center in East Jerusalem. After the Rizzoli book appeared, I was invited to a major spring 1997 exhibit at the Institut du Monde Arabe in Paris, for which I produced sixty-two 16X20" and six 20X24" Ilfochrome/Ciba prints. Simultaneously, an exhibit of forty photographs opened at the Darat al-Funun (House of Art) in Amman Jordan.

Last fall, Willamette University in Salem, Oregon, hosted another exhibit of forty 16X20" photographs. This spring, I participated in an exhibit in Sharjah, in the United Arab Emirates.

For these exhibits, I was asked to provide copy slides of the Ilfochrome/Ciba photographs for press and publicity which, again, I processed on the JOBO. Since the Ilfochrome/Ciba emulsions are so glossy and reflective, I added polarization gels to my Tota-light copy set-up and filtered at the lens with a polarizer. To tame the contrast, I used 5071 dupe film for this stage too.

## ***CELEBRATION***

I have been invited to present this work to audiences in the form of lectures. From Oxford and the School of Oriental and African Studies in London, to the Middle East, to an undergraduate Humanities program in the US, I have projected slides made on the JOBO for these lectures from original prints as well as introducing intimate details from the original transparencies.

Through these books, exhibits, and lectures, I have hoped to share with people the extraordinary legacy of Muslim culture in Jerusalem and the marvelous ways in which prior generations of craftspeople have chosen to celebrate the light of creation.

*To order a full-color hardcopy of [The Dome of the Rock](#) contact:*

Rizzoli International Publications  
Catalog sales 1-800-522-6657

<sup>1</sup>the council and bureaucratic body in charge of administering Islamic holy sites and institutions.



# Gone, But Not Forgotten

**With the recent loss of Paul Rowe, we at JOBO say farewell to a colleague and mourn the loss of a friend.**

## **IN MEMORIAM: PAUL A. ROWE**

*By Ken Owen*

Wednesday, June 17, 1998, I was setting up for a show in Anaheim, California when I received a call from the home office. I was shocked to learn Paul Rowe had died. Even though we all knew Paul was scheduled for bypass surgery the day before, we had been encouraged by initial post-operative reports. But in the early morning hours of the 17th Paul passed from this life to be with his Savior in heaven.

Many of you had the opportunity to speak with Paul over the years at JOBO. In fact, Paul was the second employee ever hired, and the only Technical Manager JOBO Fototechnic has ever had. Paul turned 69 earlier this year. He had joined JOBO back in late 1981 when the company was just gearing up to begin selling products directly in the USA. When Ricke Stauffer hired him, Paul brought a great deal of experience with him, not only in photography, but also in business. After serving in the U.S. Army during the early 1950's, Paul became a buyer for a company in Elmira, New York, building manufactured homes. Later he worked for a series of lumber companies, procuring wood from all over North America. During all this time, Paul's passion for photography as his hobby was growing. He never had space for a full-time darkroom, but he always managed to print pictures wherever he lived.

After he moved to Saginaw, Michigan, he changed careers from lumber and construction to photography, managing a camera store in Saginaw. This gave him an opportunity to have access to all kinds of photo equipment, and to upgrade to top-name equipment as tempting trade-ins appeared in the store.

Paul continued to migrate between building supplies and photo shops for his livelihood even as he moved to Ann Arbor, Michigan. It was here in Ann Arbor that Ricke Stauffer "discovered" Paul and was able to hire him away from building supplies and keep him permanently in photography.

Paul finally had access to a "full-time" darkroom through JOBO. At first it was just in the basement of Ricke's house, but in just two years the company had grown enough for us to have a darkroom right in the office. In fact, right in back of Paul's desk. It was about this time that JOBO created its first AutoLab, the ATL-1, and that turned the darkroom into a "dream" for Paul. He could carry out his work and process film and prints all at the same time. He had darkroom equipment he only dreamed of in the past, with a dichroic enlarger, state-of-the-art analyzers, multi-functional timers, water temperature control panels and all manner of "toys". For a darkroom fanatic like Paul, this was heaven on earth.

His years of hands-on processing at home really began to pay off for him. As JOBO was growing Paul had to answer questions both for the public and for the company. Should we add this product line? Will it live up to the JOBO reputation? Why are my slides green? Which processor should I buy? On and on the questions came, and Paul answered all of them. For the company, these answers would affect our future. For our customers, they affected their ability to produce quality pictures on equipment supplied by JOBO. Paul was able to measure up each customer, and help them to understand, at their individual level of expertise, what was going on and how to

improve their photography. It was a gift Paul had, and he loved to share photography with everyone that called.

About two years ago, Paul retired to part-time work here at JOBO. We couldn't set him out to pasture completely. We admired, loved, and needed Paul, and he enjoyed the work, but just couldn't do as much of it as he used to. But whenever we needed him for extra work loads, such as when much of the company would pick up and go to a major convention, Paul filled in to keep the home office running in our absence.

Paul will be sorely missed around here. As one of the staff members said the other day, "I keep expecting him to walk in the door, but it just doesn't happen." As much as missed, Paul will be remembered. It was Paul who asked me to come work for JOBO, so my roots here are planted in memories of him training me how to use and demonstrate our equipment. Many of us turned to Paul and his wisdom for personal as well as professional advice. He was our mentor, our friend, and in some ways our father.

Some of you probably noticed the picture of the plump old bear accompanying this article. It was an illustration that sat on Paul's desk for at least the last five or six years. It's caption was simple and humorous and it read, "It's called maturity!" Paul had it, in every sense of the word. God bless you Paul!

# When Good Chemistry Goes Bad

## Practical lab notes from the basement darkroom.

*by Sam Proud*

"How can I tell if my chemistry is good?" I wish there were a single reliable answer for this question but there isn't. No formula, visual inspection, or smell can tell you when your chemistry has gone bad. Oxidation caused by air left in the bottle in which the chemistry is stored, is the hidden evil that lurks in most solutions. The more air left in the bottle, the sooner that chemistry will become unusable. While using smaller bottles to reduce the amount of air in the bottle or using Protectan spray to displace the air will contribute significantly to the life of the chemistry, it will still eventually lose its potency.

As a weekend shooter, I can relate to this problem. Many times, I have mixed more chemistry than I use. Leftover chemistry may sit for days or weeks until I use it again. I can't be sure if it's still going to be good and I don't want to ruin a roll of good film. However, I don't want to just throw out the chemistry.

One way I have found to check my chemistry is to borrow a technique called a clip test, used by custom labs and apply it to my darkroom. It is not as scientific as professional labs use, and it may take a little extra time, effort, and a roll of film, but it's the best method I have found to check my chemistry.

A clip test is a small piece of film clipped from the roll and developed. The photographer gets to see how the roll will turn out without committing an entire roll and possibly losing all the images. This can help a photographer in determining if a roll needs to be pushed or pulled. Many professional labs offer this test as a standard service to their customers.

When you buy film, buy an extra roll of the same brand and type to use for your clip tests. Shoot that roll of film using a JOBO Color Card (#6817, \$28.60 list price) or similar color card as your target. Rewind the film into the canister, leaving the tongue out, and place it back in its canister. Put it in a plastic bag to avoid any chance of condensation, then put it into the refrigerator. Mark the roll's emulsion number on the bag so you can match it up for future tests.

While it is preferable to buy films that have the same emulsion, it's not that important for C-41 films, as most of them have a latitude of two stops that can be corrected with filter changes in the enlarger. In the case of E-6, I always try and match emulsion numbers. Film characteristics can vary from one lot number to another and you may have to adjust your development times accordingly. Each time you prepare to process your film, remove the test roll, cut off a length of three frames of the film, and process it before developing your principal rolls.

The best way to measure your film in the dark is by making a template for the format you are using. For 35mm, 4½ inches equals three frames of film. For 120 and 220, there are several different formats, so making a template requires a bit more work.

To make a template for three exposures, simply measure the distance from the start of the first negative to the end of the third negative. Use a piece of heavy cardboard or mount board, and cut it to the length of the film you just measured.

When you are ready to make a test, cut off enough film from the test roll by using the template you made. For 35mm, hold one end of the template against the lip of the film canister while pulling the film to the other end of the template strip. When starting a new roll of 35 mm film, make sure you cut the tongue and the first 4½ inches of the leader off before trying to cut a test strip. This procedure will remove any film exposed when you first loaded your camera.

For 120 and 220, use a clip to hold one edge of the film flush with your template, and pull the film to the other end of the template, and cut the film. By using the template, you are sure to get a length of film long enough for at least one full frame of film for comparison while not wasting the rest of your film.

Trying to re-roll your 120 or 220 film back onto the spool with the safety paper after each test is just not practical. Consider storing your test film in a bulk film tin tightly sealed with tape around the lid. If you don't shoot bulk film, check with a local lab which may have excess bulk film cans, and may be more than happy to give you one.

For large format film, expose enough sheets to ensure you have sufficient test film to match that amount of film you are going to process. As a rule of thumb, I set aside three sheets for each 25-sheet box. At home, I use a 3010 drum and process 10 sheets at a time. This ensures I have an extra sheet in case of a processing problem. If you anticipate pushing or pulling some of the film, you should hold back more for tests. Keep empty boxes to store your test film and mark them accordingly.

For processing my 35mm, I prefer a 1510 tank. For 120 and 220 test strips I use a 1520 tank. Measure out the appropriate amount of chemistry for the tank you're using and process the strip. Don't skimp here. You want to make sure that you have enough chemical to not only cover the test strip but to develop it properly.

During the process, you may reclaim your chemistry and at the end of the process pour the chemistry back into the bottle and re-measure for your principal processing run. The three frames of the clip test will not affect the performance of the developer used to process the entire roll of film.

Make sure you don't contaminate your chemistry by pouring it into the wrong bottle, and always use a fresh, dry reel. If you are going to use the same tank, make sure the tank, lid and funnel are completely dry before processing your film. Always remove the light trap funnel from the lid and dry them separately. To avoid any problem with tanks, I use a second tank and reel combination.

After you have processed the test strip, let the film dry completely and then inspect it. With C-41, what you are looking for is printable negatives. Check the image for density, evenness of development, edge markings, and any heavy color casts over the negative. In other words, check the overall look of the negative. With most C-41 films, you have a two stop latitude, and you can make color corrections using the enlarger's filter pack.

E-6, unfortunately, is not as forgiving as C-41 when it comes to exposure or processing latitudes. It is one of the more difficult processes to master, as there are so many variables to consider. Process your film and allow it to dry. View your test film using a light box. Check all the colors for density and pay special attention to the whites. Make sure there is no overt color cast. If something has gone wrong the color card will show it. Using a good loupe may help you when you're evaluating your transparency.

In either case, if all looks good you have a high degree of confidence that your chemistry and process technique is working, and the film you are about to develop will yield good results. If not, something has gone wrong with your processing or chemistry. In any event, you have only lost the test film and not your primary roll.

Most color processing problems can be separated into five categories:

- \*Chemical exhaustion caused by over-use or oxidation.
- \*Contamination of developer by other solutions.
- \*Silver retention from inadequate bleach or bleachfix time.
- \*Processing error by omitting a step, or using a chemical out of sequence.
- \*Time or temperature error.

If you are sure your processing procedures were correct, then it's time to dump the chemistry and mix fresh.

As a rule, I always run a test strip on any new chemistry just mixed. It's not hard to make a mistake mixing chemistry. I have done it before and probably will do it again. If I make a mistake, I only sacrifice a test strip and not my principal film.

While using this method does not give you a 100 percent guarantee of success, it helps put the odds in your favor that the chemistry and your process are working properly before you process your important roll of film.

## Scanning for Optimal Inkjet Prints

By Andrew Oransky - Arkwright, Inc.

Okay, you just spent \$1000 or so on a brand new color inkjet printer and scanner. For your money, you probably got a 600 dpi scanner and a 1440 dpi printer. Think about that for a second. Don't you want scanning resolution to match printing resolution? Well, the best answer is... sort of. There are many issues involved in both scanning and printing resolutions, and I will attempt to address one of the more relevant ones here.

This issue is that of the difference between printer resolution and scanner resolution. In order to understand the distinction, it is important to back up and understand a little about continuous vs. halftone devices. In a nutshell, your scanner is the former, and your printer is the latter, so sometimes the ratings assigned to each are not necessarily compatible from one to the other.

Digital images are made up of discrete entities called pixels. By definition, any pixel in an image can be assigned any of the various tonal values reproducible by that system. Essentially, the reading device in your scanner, called a CCD, takes a densitometric reading 600 times per inch (for a 600 dpi scanner), and then sends this matrix of readings to the computer, where the tonal values are re-assembled into an image you can view on the screen. Seems pretty simple so far, huh?

For the moment, let's assume that all your devices are monochrome. (I know, they're not, but stick with me.) Your scanner carries a second rating, usually reported right next to the resolution. This is generally called color depth and reported in bits. An inexpensive home scanner is typically 24 bit. This is really 8 bits each for red, green, and blue. A monochrome scan then, is 8 bits. Eight bits means that the scanner divides the tones between black and white into 28, or 256, individual levels of gray. (Remember, it's monochrome here.)

What does any of this have to do with the difference between continuous tone and halftone devices? Well, in your scanner, each of the 600 dots per inch can be assigned any of those 256 values. One dot = one tone. This is the definition of a continuous tone device. This also means that each of those 600 dots per inch is one pixel.

Printer dots are not pixels. Inkjet printers are halftone devices. The difference between the two is that in a halftone device, each dot can only be set one of two ways: on or off. In order to create midtones, halftone devices have to use a combination of individual dots. The simplest example is two dots, which are actually capable of reproducing three tones. If they are both on, the combination makes black. If they are both off, the combination makes white. If one is on, then the viewer sees a medium gray. In order to create all the shades in the 8 bit system described above, a halftone printer needs 256 dots. In combinations of all on to all off, this will form the correct number of tones.

A matrix of 256 dots can be formed using a square with 16 dots on each side. This square actually comprises a pixel, since it is the minimum area in the printed image that can represent any of the tones in the scanned image. Every time the computer sends a scanned pixel to the printer, it takes 256 printed dots to put it on paper. In order to translate from one to the other, you need to calculate how many pixels your scanner can reproduce for the number of dots that it is able to print. This is a simple calculation based upon the fact that those 256 dots are formed from an eight by eight square. It is as follows:  
printer resolution in one dimension ÷ dots per pixel in one dimension = final image resolution.

The hypothetical 1440 dpi printer in the example is really a 1440 vertical x 1440 horizontal printer, so the calculation looks like this:

$1440 \text{ dpi} \div 8 \text{ dots/pixel} = 180 \text{ pixels per inch in each direction}$



Apply whatever numbers are appropriate to your system, and then multiply the final result by 2. This multiplier is what highly technical people would call a fudge factor. It accounts for some resolution enhancements that the printer can deliver by varying the way it lays down the dots. Even with the fudge factor, optimal print quality can be achieved by sending an image file with a final resolution of 360 pixels per inch to a 1440 dpi inkjet printer. Although we have been discussing monochrome devices, the same rules hold for color. Digital systems form color by combining three monochrome channels, much the way photographic film does.

To verify this (since I know you don't believe me) try the following experiment:

1. Scan an image at your scanner's maximum resolution.
2. Import it into Photoshop, or some other image editing software.
3. Without re-sizing the image, print it to your inkjet printer.
4. Go to the 'Image' menu and choose 'Size'.
5. Lock in the physical size of the image, but lower the resolution to whatever the result of your calculations was. (Remember the fudge factor.)
6. Print the image using the same paper type and printer settings.

You should not be able to see a difference between the two prints. On the other hand, the second file is much smaller than the first, and efficient use of storage space is the point behind all of this.

When using this method, just be sure that the image is the proper resolution at its final size. If you scan a 2" x 3" image that you want to enlarge to 4" x 6", you will have to scan it at twice the calculated resolution, since doubling the size of the image in the computer halves the number of pixels per inch in each direction.