Close-Up

Inside:
Plastic Toy Photography: Lo-Fi Images
Tech Tips
Portfolio: Images of Newfoundland, Judy Taylor
Can I Come Along?
Shoots Around Victoria
Beginners' Corner
Sharpening: It's just Arithmetic
.....and more

"May is Lobster Season" by Judy Taylor. At English Harbour, NL, **lobster traps sit while fishermen wait and hope that the ice is carried by wind and tide away from the fishing grounds.**

Victoria Camera Club

Sept/Oct 2013 Volume 66 Number 7

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Race to the End of the Earth is organized by the American Museum of Natural History, New York, and the Royal British Columbia Museum, and Musée des Confluences, Lyon, France.

Victoria Camera Club

Close-Up is the magazine of the Victoria Camera Club,
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Deadline for submissions for the November issue is October 5th 2013.
Editor, Richard James, e-mail to *newsletter@victoriacameraclub.org*
for submissions or to advertise in *Close-Up*.

Established in 1944, the Victoria Camera Club is a group of people who share the love of photography. We come together to appreciate each other's images, to learn, both from the feedback on our own images and from the images of others, and to exchange tips on how and where to take effective photographs. Our focus is on continuous learning. Our media include both film and digital and our expertise ranges from novice to master.

Events

We hold a number of events including:

- Three meetings a month from September to April (excluding December)
- Field trips
- Workshops
- Special Interest Groups (SIGs)
- Competitions within the club and externally

Meetings begin at 7:30 PM at Norway House, 1110 Hillside Avenue, Victoria, BC.

Membership

Annual fees include all workshops (except studio shoots and special events), meetings and all field trips unless travel/accommodation is involved. Annual fees are: Individual, $85; Family, $128; Student, $43.

For current event information and locations please go to the website *victoriacameraclub.org* where you can also read or download the colour version of *Close-Up*.

For additional information: please contact the appropriate Committee Chair:

Membership: membership@victoriacameraclub.org
Workshops: workshops@victoriacameraclub.org
Field Trips: fieldtrips@victoriacameraclub.org
Meetings: meetings@victoriacameraclub.org
Website: webmaster@victoriacameraclub.org
Close-Up: newsletter@victoriacameraclub.org
or call Lois Burton, President at 250-652-6940.

What's Inside

Club Calendar..... 4
President's Message 4
Plastic Toy Photography: Lo-Fi Images..... 5
Tech Tips..... 8
Portfolio: Images of Newfoundland, Judy Taylor... 10
Annual Competition Judging..... 15
Can I Come Along? 16
How I Did It..... 18
Shoots Around Victoria 19
Beginners' Corner..... 20
Sharpening: It's Just Arithmetic 21

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The Victoria Camera Club is a member club of the Community Arts Council of Greater Victoria (CACGV), Canadian Association for Photographic Arts (CAPA), and the Photographic Society of America (PSA).

Calendar

Our workshop and field trip program is too extensive to list in *Close-Up.* Please go to the calendar page on the website (*www.victoriacameraclub.org*) for the latest details of all our workshops, field trips and meetings.

Thursday, Sept 5th; Competition Night

The annual competition images will be presented followed by a discussion of the competition guidelines.

For this month's competition only, the deadline for submission of prints and digital images is Thursday, September 12th, Presentation Night. Theme: Water Drops.

Thursday, Sept 12th; Presentation Night

Our presenter this month, Rick Hulbert, will be speaking about "Photography with an Architectural Attitude."

Rick is both a practising architect and a professional photographer who brings his technical knowledge of urban design and architecture into his photography. Rick's presentation is an educational experience that will focus on photographing the built environment and refer to his own images. Rick will show us how an "architectural attitude" in photography can influence many photographic genres. *rickhulbertphotography.com/about.*

Thursday, Sept 19th; Members' Night

Presentation of members' and field trip slides, prints or short technical topics. **Guest night, please see page 9 for details.**

Thursday, Oct 3rd; Competition Night

Presentation of the September competition results and submission of October competition images. Theme: Orton Effect.

Thursday, Oct 10th; Presentation Night

Our presenter this month is Tracey Harper, a Victoria professional photographer who is well known to us. Tracey will run a hands-on presentation on "the art of posing" which will include audience participation. You can see Tracey's work at: *www.fusionartistry.com.*

Thursday, Oct 17th; Members' Night

Presentation of members' and field trip slides, prints or short technical topics.

Meeting, field trip and workshop visitor policy: Visitors are welcome to attend any three events in a two month period subject to the availability of space and a $20 per session fee for workshops.

President's Message

I would like to take a moment to welcome all of our current members to another great year with Victoria Camera Club, and to also extend a warm welcome to everyone who is new to the club. This club is about learning, advancing our photography skills, and most important getting out and having fun! We are pleased that you are interested in getting involved and we hope that we will see you at many of our events and workshops.

Victoria Camera Club is a very active photography club and each month we have guest speakers, presentations from fellow members and monthly competitions where you will see many inspiring images.

The strength of our organization is premised on the level of involvement of our members. You will get out of the club what you put in, so we encourage all members to maximize the value from your membership by taking advantage of the club's many offerings. These are a great way to get to know your fellow members and to improve your skills. Then, please remember that you can pass on to others the great ideas and techniques that you have learnt by assisting with, or leading, one of our workshops or field trips.

Our website is the primary means of getting information to you. Bookmark the website (especially the calendar page) and check it often as new events are announced.

We are having a "Guest Night" for all members and interested photographers on Thursday, September 19th 7:30 – 9:30. This will be a great opportunity to come and see what our club is about. We hope that all members will support our club by bringing along a friend or relative who might be interested in joining us. Anyone with an interest in photography is invited whether they have experience or not.

Our Photo Scavenger Hunt is in September; it is a fun-filled event where you will be sent out individually or in teams with a list of images to return with. Come out, meet some new friends and take some great shots, and afterwards join your fellow photographers for lunch.

We are a large club and it is easy for new members and guests to get lost in the crowd. Please take some time to talk with the people sitting around you, especially if they are a guest or new member because next time they come they will see a familiar face in the crowd!

Lois Burton, President

by Anne Lei-Yeung So

My interest in plastic camera photography came completely by accident. A few years ago, I thought it would be fun to shoot medium format film. I looked for used medium format cameras only to find that they can be uber-expensive, even old battered ones! In my search, I discovered Diana and Holga cameras and learned that these cheap plastic cameras used medium format 120 film. The Diana had been made for prizes from cereal boxes, for fairs, and as novelty items in the 1960s. In the 1980s, the Holga, similar to the Diana, was mass produced to supply Chinese citizens with cheap, accessible cameras for family or personal photography.

These cameras had been known to produce lo-fidelity, high contrast, blurry images with mysterious effects due to light leaks and low quality lenses. They were said to be unpredictable and lacking in quality. With the increasing use of 35mm photography and later digital photography, plastic toy cameras became almost obsolete. In recent years, there has been a resurgence of lo-fidelity photography using plastic toy 120/110/35mm cameras, antique cameras, Polaroids, and cell phone apps to replicate the dreamy, nostalgic look.

Initially, I was fascinated by the Diana and Holga's simplicity, cuteness, toy-likeness, unpredictability, and medium format capacity. I enjoyed artistic images others had made with toy cameras. Since the iPhone and mobile photographic apps were not on the market quite yet, a toy camera was an opportunity to try medium format and lo-fidelity photography. Generally, I avoid plastic items when hardier more sustainable products are available. In the case of toy cameras, I have made an exception. I purchased my first plastic camera, the Holga, on eBay for about $50. I wasn't sure what I would get, but I knew it was about $4000 less than a used Hasselblad. When it arrived, I was amazed at the fact that it was truly "plastic." The body, the lens, the internal parts, and the external knobs were all completely plastic. I wondered if I had made a mistake. I wondered if this "crappy" plastic toy would actually work! Since it came with film, I had to just try it!

The camera came with simple diagrams, and I learned to load the medium format film which I found rather fun. There are interchangeable "masks" to allow for 12 or 16 images. Since I was curious about shooting "square," I opted for the 12-image mask. Looking at the outside of the camera, I realized that you could change the aperture using 2 simple settings, sunny or cloudy. I also discovered you could do manual focus by choosing the one person, few people, crowd, or mountain icons. There was a beauty in the camera's simplicity but I was surprised that it had a few controllable features.

I took the camera around with me for a few days and took my first roll of 120 film. When I had it processed, I wasn't sure if anything would turn out so I requested scans without prints. To my surprise, the Holga did work; almost too well. It produced mediocre, coherent looking images that were plain and not very interesting like the artsy images I had hoped for. After more research on toy plastic cameras, I found out that not all of them provide the same quality or predictable traits. I realized that I had purchased a "decently" constructed copy and in order to get some interesting work I would need to modify the camera somehow.

Numerous internet sites and YouTube videos show different tricks and modifications one could do to "spruce up" a plastic camera. Some suggestions include scratching the lens on purpose, multiple exposures, taping parts of the camera where leaks are likely to occur, loosening some spots to allow more light in, conversions into a pinhole or wet plate camera, or making modifications to allow for 35mm film.

My favourite suggestion was to remove the masks and all extraneous parts except the film spools so

that continuous overlapping of images could occur. I learned of more modifications to help the camera function, which included wedging small scraps of folded paper or plastic, often the film wrapper, under the film reels to ensure the film stayed tight. I also tried using sponges to hold the film in place and to keep the reels taut, but the scraps worked better.

I have enjoyed this so much that almost all of my Holga images are now done unmasked and overlapping, using variations of this modification.

When using toy plastic cameras, I have usually used 120 colour film, so I need to have the film processed in a pro-lab. If I shoot masked, I have the entire roll scanned and saved to tif files. For unmasked film, scanning becomes more complicated and expensive. I use a lightbox to identify regions to be scanned and the pro-lab cuts the selection to be flatbed scanned to tif files.

Scanned tif files allow me to look at the images, similar in quality to a raw file. I can then choose to have the image printed from the negative or use Lightroom to make some basic changes to exposure and saturation. I try to limit the amount of digital changes to help maintain the colour and quality of the image. In the future, I would like to use B & W film so that I can do the processing and printing in the darkroom.

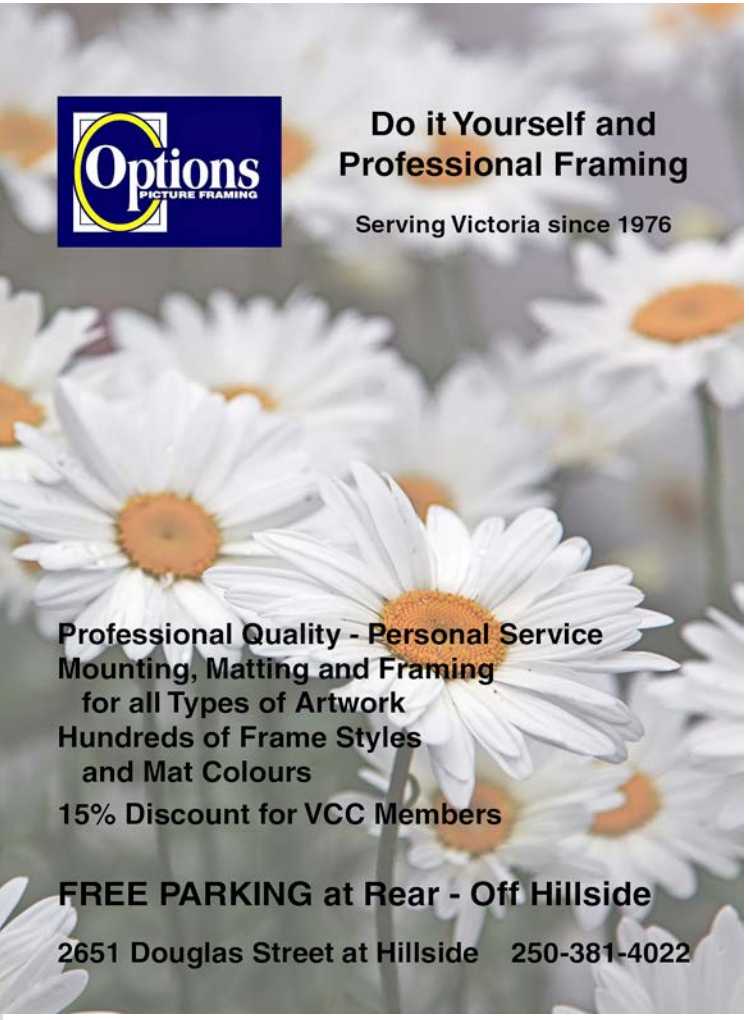
Since purchasing the Holga, I have now acquired a secondhand Diana+ 120 with changeable lens options, a Diana Mini 35mm and a Fisheye ii 35mm. So far the

Holga has been my favourite, although admittedly I have not given the other cameras as much airtime. In a time when most people are using digital photography, images with sharpness, clarity, and precision are obtainable. For some, film photography might seem obsolete. But plastic toy camera photography has helped keep film photography accessible and alive.

Although I now shoot mostly in digital, I still use 35mm and 120 film in plastic and antique cameras. I do love clear, sharp focus, control, and playing with depth of field. But there are times where I really enjoy loading film, using the advance dial, listening to the clicks, and anticipating how the images will turn out. I also love how fun and amazing plastic film cameras are for creating the unexpected!

Tricks or Tips

- 120 film can still be purchased but don't shy away from expired film for lo-fidelity images.
- Many people have old film they are willing to pass off to willing recipients; so be nice to your friends.
- 400-800 ISO are common for lo-fidelity but use whatever is available.
- Shoot in high contrast situations for strange effects, especially when using the Diana.
- Don't worry if you can't remember if you've advanced your film; multiple exposures can be interesting.
- If you shoot unmasked, don't worry how far you advance the film unless you want to isolate an image.
- Painter's tape is a good friend; use it to cover potential light leaks or to hold the plastic body together.
- Process and scan without printing into tif files (scanning is expensive if you shoot unmasked).
- Use b & w film if you have the chemistry/equipment to develop your own work.
- Look for secondhand toy cameras when possible.
- Plastic toy cameras can be ordered on-line through E-Bay or *lomography.com*.
- Canadian retailers include Camera Traders (Victoria), Vancouver Art Gallery, gigi b (Granville Island), Urban Outfitters (N. America), Lomography Gallery shop (Toronto).
- Try adapters which allow Diana lenses to be mounted onto DSLRs.
- Expect the unexpected! Use an SLR or DSLR if sharpness and accuracy are desired.
- Check for occasional toy and antique camera updates at *annesophotography.blogspot.ca*.



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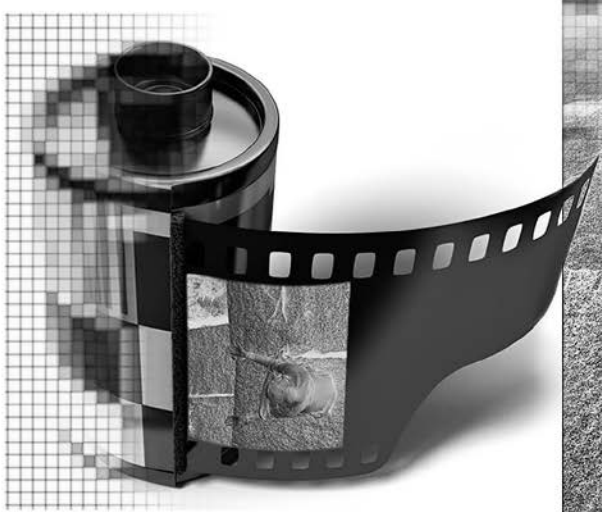

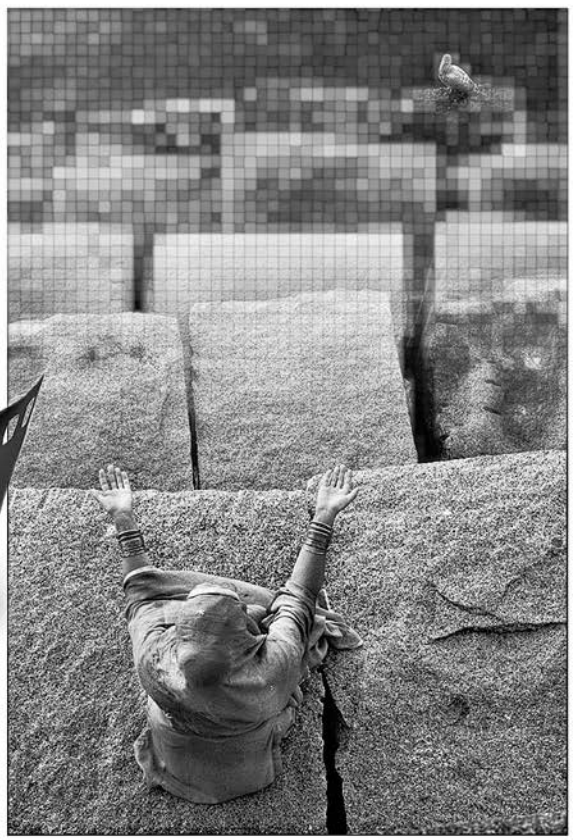

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Framing your Images

The most important tip to get a high resolution and high quality image is, “get it right in the camera.” So here are a few things to bear in mind:

- Leave just enough room in the frame to ensure you get all of the subject and nothing extra that you might want to crop off later. If you’re planning on making the image other than standard “35mm format, 3:2” bear this in mind when you set up the framing.
- Watch what goes on around the edges; if you have to “cut something off” it’s better to have a large chunk of it in the image rather than the pointed end of a branch sticking in from the side.
- Watch the horizon and make sure it’s truly horizontal. One of the most destructive things you can do to an image is rotate it in editing as every single pixel gets interpolated, which can significantly reduce the resolution of your images.
- If you’re shooting anything that should look vertical, make sure it is by ensuring that the camera back is also vertical. Use a two axis spirit level on the hot shoe, or your camera’s built-in horizon display.
- If you are shooting landscapes, it is important to have a foreground object clearly in focus to give a better perception of depth to the image. Distant mountains over a valley with nothing in the foreground just don’t look as good as you thought they were.
- Your choice of camera position relative to the subject, and the focal length of the lens that you choose, are important as these parameters govern the perceived perspective of the image. Although a wide-angle lens allows you to get close and “get a lot in” it also distorts perspective making closer objects relatively larger and distant objects relatively smaller. Conversely, a telephoto compresses distance and makes objects appear closer together. Of course, there may be circumstances where this is exactly what you want.

Do you have difficulty imagining what an image is going to look like in various formats? Here’s a little trick that you can use without even looking through the viewfinder. Take a few scraps of matboard, or any other light cardboard, and cut rectangular holes in them in the formats that you might most often use such as 3:2 (35mm format), 4:5 (the traditional 8 x 10 print format), 16:9 (a common movie format that might work well for wide landscapes), or even 1:1 (square). If your camera sensor is not 3:2 format then you should add its format to the selection. You can carry these on a short loop of string in your camera pack or, with a longer piece of string dangling around your neck for immediate access.

Levels and Curves

Levels and curves are two powerful tools in Photoshop when editing TIF or PSD images. When editing images in Adobe Camera Raw (ACR), either in Photoshop or Lightroom, the tools are slightly different but you end up with very much the same effect.

So what do they do? An important aspect of producing a high quality image is to make sure that you have bright highlights, and shadows with details. If your image is overexposed or underexposed you are challenging yourself to produce good output. So here we will focus on a “normally exposed” image and discuss how to use these tools.

In Photoshop, levels is used to set the key black and white points so that you just have detail in the image at both ends of the range. Then the midpoint is adjusted to give you a good distribution of intensity in the mid-range of the image. Curves is used primarily to adjust the contrast in the image, after you have set the black-and-white points. Curves is like a graph; you can pull it up and down and anchor various points to get the effect you want. For example, to increase contrast you generally pull the highlights up and the shadows down. To lighten the image you pull the midpoint up and to darken it, pull the midpoint down.

When working in ACR, either in Lightroom or Photoshop, you do not have a “levels” tool. Instead you have more flexibility with the curves tool. You adjust the endpoints, whites and blacks, with the white and black sliders respectively, and then fine tune the highlights and shadows with the highlights and shadows sliders. There is an overall contrast adjustment as well as an exposure adjustment. Together these tools emulate quite well what you did in Photoshop with the levels tool. You also have the tone curve which allows you more control over contrast.

Going beyond the simplicity of Lightroom, which does not support layers and masks, in Photoshop you can make all these adjustments to different parts of the image using masks on adjustment layers. But Lightroom users should not despair as you have the “adjustment brush” which allows you to paint on local adjustments to exposure, contrast, highlights and shadows (as well as a few other things).

These adjustments are key to producing images that have good visual impact and reflect the scene as you saw it in your mind’s eye.

In-camera JPEG settings

Whether you are shooting and recording your images in JPEG only or in RAW, the JPEG settings in your camera are very important. That's because amongst other things, the image you see on the LCD screen on the back of your camera is the in-camera generated JPEG. If you're only recording JPEG images, then you want to set up your camera so that you get the best possible rendition with a minimum of editing.

Some of these settings are dependent on the individual scene so you might have to choose between optimizing the scene in-camera and trying to adjust it later.

Two of the most important settings are the colour balance and sharpening as they are more difficult to correct later in a JPEG image. If you have the RAW image, then you can go to it and adjust the colour balance as what you see in the raw converter is simply the colour balance value that was recorded in the camera without adjusting the actual image content. This is a really good reason to record RAW images.

Describing where to find the settings for these for different camera models, or even just brands, is beyond the scope of this article; however, some of the key settings that you can adjust are:

- Contrast - increase/decrease image contrast
- Brightness - increase/decrease image brightness (not the same as exposure compensation)
- Saturation - increase/decrease colour vividness
- Hue - change the colour balance
- Filters - simulate the effect of colour filters, for example selecting red would make blue sky darker in monochrome images
- Toning - give monochrome images a colour tint such as sepia etc.
- Sharpening - enhance the edges in images; see the article on page 21 for background information

All these settings are "baked-in" to your JPEG image and the JPEG preview contained within your RAW file. They have no impact on the actual RAW data saved. Having said that, you might be quite satisfied with what you get when these are adjusted correctly, or you may find that you prefer the higher degree of control and quality from editing your RAW files.

VCC Guest Night

Members are invited to bring guests to members night on September 19th to introduce them to the club's activities and to meet other members.

You don't have to be invited, so anybody can just drop in and see what we do.

Members night is where we showcase the work of members with an explanation of why and how they made particular images or, members may make a short technical presentation.

For this night, we encourage you to arrive at 7 pm, enjoy a longer coffee break and linger after to find out what you need to know about the club.

- Three meetings a month, September to April
- Monthly competitions for novices, intermediate and advanced photographers
- Learn at our Workshops on camera operation and image processing
- Expand your horizons with our Field Trips, locally and out-of-town
- Join one of our three Three special interest groups, Nature, Lighting and Creative, to further explore your interests.

Images of Newfoundland

by Judy Taylor

When I was almost four, with hair a shade of red, I had my first sitting in a portrait studio. This was the 1940s and colour negatives were in our future as digital photography was in our future a decade ago. Success was in the hands of the technician's artistry, who relying on memory and with a lock of my hair, hand-tinted the black and white photo to the true likeness of a mother's child. This was my first exposure to coloured photography.

The photo, that I still possess, preceded a life that has been filled with art and colour. My Mother with her artistic eye was a creator of vignettes. The garden, the table setting, food presentation, afternoon tea, everything was done with details to colour, balance and presentation. My Father, an entrepreneur and parkland developer shaped the land and explored the wilderness while teaching me to take notice of my surrounding and appreciate the beauty within my surroundings. Those childhood influences have been my inspirations and remain prevalent in the images that I choose to create in textile, visual and photographic art.

In 1950 I was eight years old and living in Moncton, New Brunswick with a subscription to National Geographic coming to my door. The photos transported me into a world of colour photography I had never seen before. I was hooked and asked Santa for a Kodak Brownie. The resulting photos were not very good.

I have been an active member of the Victoria Camera Club for the past two years and really enjoy learning and sharing with fellow photography enthusiasts. In particular I have been learning about; Photoshop, Lightroom, and Aperture as well as playing with Focus and Exposure.

I spend spring and summer in Newfoundland, in the small outport community of English Harbour, Trinity Bay (perm. population, about 50), and winter in Victoria. I have lived in Newfoundland and Labrador for the better part of 31 years enjoying its rich culture past and present. English Harbour, established in the mid 1700s, once had 400 residents. The wars, fishing accidents and the Trinity Bay Sealing Disaster (February 1892) all helped to diminish the number of residents. Today there are 55 houses, but only 19 retain full time residents. A majority retain the Newfoundland traditional style and date to the late 1800s. There is one working fisherman in the village and the remaining, and beautifully restored, 1800s All Saints Anglican Church is now the English Harbour Arts Centre.

Visually, it is a 360 degree view of rolling hills covered with grass and wildflowers, forested woods, rugged cliffs and a rocky shoreline. English Harbour appealed to the makers of "The Shipping News," "Random Passage," and the soon to be released "The Grand Seduction" with scenes filmed in and around English Harbour.

As an artist and an avid gardener, I am influenced and drawn to the work of Georgia O'Keeffe which influences my desire to capture floral images as shapes, colour, singularly or in clusters. Street photography speaks to an inner voice that I hear and feel when confronted with an image that brings forth an emotion. It is connecting through the lens, the light, action and expression of people living in their moment that answers my inner voice. In Newfoundland I find my inner voice wakes me before dawn and interrupts many a meal for the light and colour happens quickly and is fleeting.

Light and life in Newfoundland are ever changing and never dull. The environment produces a light that is more often than not filtered by wispy clouds that are undercut by fog so thick you can lean on it, or the wind is so strong that you tie down the BBQ, grab the camera and enjoy the breakers crashing against the shore. A day or an hour of no wind creates seas so flat; one can see the sea life passing through the water or hear the blow of the whales as it echoes off the ocean cliffs and sunlight twinkles and dances on the gentle rise and fall of the ocean. Sweet light creates colour; morning sunrises run competition to sunsets, tropical storms and hurricanes are like Mummers at your door. You have no idea who or what they are going to do until they have left. It is a photographers' delight. I have seen gulls frolicking in the horse's manes created by waves crashing upon the cliffs, brilliant crisp sun-filled skies followed by fire shades of liquid gold sunsets that cool and return the dawn in soft pastels.

Newfoundland has a rich cultural past and present. I have come to the realization that what I enjoy photographing is capturing the essence of the land and seascape, the colour and light and the human contact to the landscape and sea. Many of the images that are in this article are available at the Aleksandrs Gallery of Fine Art, Bonavista, Newfoundland.

Come late fall I shall return to Victoria and the Victoria Camera Club, enthusiastic to meet old friends and new acquaintances. This Portfolio is a small token of my appreciation for the knowledge, assistance and friendship I have received as a member of the very fluid and dynamic Victoria Camera Club.

“Mother’s Joy”

“Berry Picking”

“Harvesting Potatoes”

Life, especially in Newfoundland’s outports, is a delicate balance between subsistence agriculture, fishing and keeping some joy in life.

While many families have been successful for generations, others have slowly moved away from the outports to the cities and other provinces in Canada.

“Mother’s Joy”: I was focused on seagulls along the breakwater, when a mother called to her child, I turned, focused and clicked. I find this photo very powerful. I sense the love and security it portrays and I fill with emotion. Seagulls could not do that.

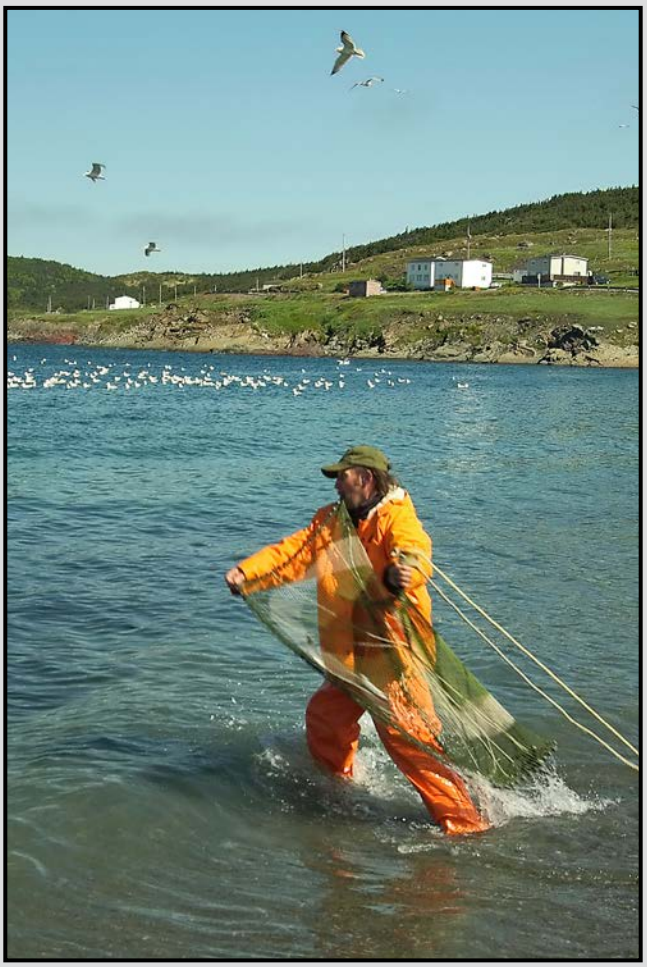
Pentax K10D 300mm, f9.5, 1/750 second, ISO 100.

“Harvesting Potatoes”: A parcel of land, away from the houses, enclosed, cleared of rocks and used for the growing of potatoes is called “the Potato Ground.” An enclosed area, by your house, that is used for the cultivation of potatoes and vegetables is “the Potato Garden.” Chesley, Douglas and Hubert Penney harvest the season’s crop; grown organically using peat, moose manure and caplin providing the nutrients that enables the growing of potatoes in this garden for over fifty years.

Pentax K10D 62.5mm, f13, 1/60 second, ISO 400.

“Berry Picking”: they were so intently involved in picking raspberries, and interacting that they did not notice my presence nor hear the car as I stopped and shot this young family enjoying their innocent lives from the car window. The Newfoundland landscape has an abundance of berries; blueberries, partridge berries, bakeapples, marsh berries, raspberries to name a few of the favourites.

Pentax K10D 300mm, f5.8, 1/180 second, ISO 100.



"Casting for Caplin"

"Fishermen at Work"

"Sing Johnny Poker"

Newfoundland's fishing industry has had its ups and downs. Much of it is still based on tiny outports scattered along the rugged coast, with many fishermen making little more than a subsistence living.

It is hard physical work, often lonely and occasionally requiring team effort to land the catch or beach the boats.

"Casting for Caplin": Chesley Penney of English Harbour, Trinity Bay, nets his own cast-nets in various sizes. When casting he holds a lead weight in his teeth so both hands are free to throw it in a circular motion over the fish. Once caught, the caplin are eaten fresh, dried for winter food and buried in the potato gardens for fertilizer. Caplin is a member of the smelt family that spawns on sandy beaches in early summer.

Pentax K10D 21mm, f6.7, 1/180 second, ISO 100.

Sing, "Johnny Poker": The men come a-running to lend a hand when a boat needs to be launched or hauled out. When they come to a hard nip, someone would call out for a "hauling song" such as "Johnny Poker." The words were different in each community.

Pentax K10d 16mm, f6.7, 1/125 second, ISO 100.

"Fishermen at Work": Austin Tucker, the last working fisherman in English Harbour is on the water before dawn working his nets and traps harvesting; lobster, cod, crab, mackerel and herring. Some trips are miles out to sea, others within the bay. This morning he was within the bay; the fog horn sounded every 16 seconds as the fog rolled into the bay. Watching from the window, I saw the image unfold as I quickly raced to set up the tripod. There are two fishermen in the boat Austin and Dennis Hookey.

Pentax K10D 45mm, f6.7, 1/250 second, ISO 100.

"Second-hand Cdn Tire Store"

"Stores No More Along the Shore"

"Waiting"

Newfoundland's towns and outports often reflect the challenging environment and difficulties of life in small and isolated communities. Some outports are now abandoned and the buildings are disintegrating; others are hanging on by a thread and a few are thriving.

The traditional style Newfoundland homes, many built in the 1800s, are painted in shades of Dory Yellow, Signal Red, Blasty Bough, Bakeapple Jam to name a few of the colours that dot the landscape.

"Second-hand Cdn Tire Store": Winter's fuel is stacked and dried prior to storage in this 1850s building that was home to a family of 18 and is now filled with what was once thrown away. Looking for a hose or pipe, an obscure tool, screw or bolt? It will most likely be found and willingly given. If you live in English Harbour, you will sooner or later need something from the Second-hand Cdn Tire Store proprietors; Chelsey and Douglas Penney.

Pentax K10D 34mm, f8 1/125 second, ISO 100.

"Waiting": how inviting, just waiting for you to take a seat, enjoy the warmth before the light moves, the colours fade and the day has past.

Pentax K10D 26mm, f6.7, 1/250 second, ISO 200.

"Stores No More Along the Shore": In Newfoundland a Store is a fisherman's waterfront premises for the storage and repair of gear. The upper story is referred to as the "Store Loft," where many a tale was told. This photo was taken prior to hurricane Igor, Sept. 21, 2010, that destroyed all Stores which had been in use for over 80 years. The middle Store was returned and restored.

Pentax K10D 55mm, f8 1/30 second, ISO 200.

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Annual Competition Judging

by Richard Webber, Chair, Comps Committee

On April 6th the Competition Committee held the year end judging. This is the single largest club competition of the season involving a total of 371 entries this year. The committee selected a panel of three professional photographers: Gregg Eligh (instructor Western Academy of Photography), Chris Deakin (certified Adobe instructor/web designer), and Pete Ryan (National Geographic photographer).

Prior to the images being judged, the panel was provided with a broad overview of the VCC's competition judging guidelines. To ensure the highest degree of fairness and consistency in the judging process, the panel judged each level in its entirety before moving to the next level.

Digital images were organized by level/category in Adobe Lightroom and viewed on a large high resolution monitor. Prints were placed on easels in another room which had the benefit of good natural lighting.

Not surprisingly, judging took several hours to complete with engaging discussions ensuing as the panel attempted to reach a consensus in their selection of the top five images in each category. Suffice to say the panel had their work cut out for them with this year's impressive lineup. In two categories the panel deviated from our usual practice and awarded three honourable mentions. Talk about close competition.

Committee members had an exclusive and invaluable opportunity to listen in on the panel's discussions and assessment of the images. For the benefit of all members, I wanted to share some of the panel's key observations:

- Shoot looser and crop later; avoid "squeezing" an image into the frame.
- Don't overdo post processing.
- In open and creative categories avoid placing too much reliance on the digital technique and more emphasis on the digital capture.
- Images that were highly manipulated didn't impress the judges; they were more interested in seeing a creative idea in the image and not a demonstration of Photoshop skills.
- Less is more; simplify your image.
- Create dynamic images by not placing your subject in the middle of the frame; also pay attention to where you place the horizon.
- Be careful about including too much in the top or bottom third of the frame with no information in it e. g., too much sky.
- Pay attention to the edges of your images which may have protruding elements like branches, buildings etc.; these can be easily removed.
- For landscapes and scenics, be careful to not cut off interesting foreground elements which can aid in completing the picture.
- Take several photos of the same subject but with a different perspective; and horizontal and verticals, Get creative!
- Monochromes often appeared to be too dark and heavy (muddy); if you ensure there are details in the highlights and in the blacks, the mid tones will look after themselves.
- Glossy paper is not recommended; satin or matte finish are preferred.
- Be careful that your printed image does not appear "flat," ensure adequate contrast.
- The panel consistently reached consensus on the selection of the top 5 images in each category but did not necessarily agree on the same order of placings; which speaks to the fact that the best images do indeed stand out from the rest.
- A useful exercise for photographers is to look at placed images; and try and learn what makes them "better" than those which did not place.
- Many images lacked creativity which elicited a typical reaction from the panel: "been there done that."
- Try and include something different in the scene that seemingly has nothing to do with it in order to change or provide a more compelling perspective.

For those of you that may have felt a little intimidated about entering in the year end competition, it may be useful to note that images that had placed well in monthly competitions didn't necessarily place in the year end competition.

Regardless of the subject matter and/or location, in large part it's all about whether you, in the opinion of the panel, are able to produce a compelling image. You will never know how you measure up, so for next season I would encourage all of you to enter the year end competition. You have nothing to lose and a lot to gain from a truly rewarding experience.

I hope you find this information helpful; I know we did. Overall the panel was impressed with the club's photographic skills and artistry which is plainly evident in the diversity of placed images. Keep up the good work, and thanks to all for making this year a great season!

by Paul Ross

This is the fifth and final part of a series documenting our travels across North America in 2011 and 2012.

When my son was in grade 4 we decided that when he graduated from high school we would travel for a year. That turned into “we will circumnavigate North America in our truck and trailer.” I turned that into a photo project; I was going to get pictures of all of the Provinces and States. On our first loop we went across Canada and went home for Christmas through the mid-states. Then we started again in January with a loop covering the southern states. We had eight states left.

We headed north from Victoria to Kitwanga (northern BC) to attend the wedding of our niece. During the wedding reception they did a Grand March (a native tradition). The March is led by a couple of elders and they lead all of the guests in an intricate series of weaves around the floor.

We then headed toward the eight states that we missed on our two previous loops around the US. We followed Highway 16 across BC to the Rockies. The photographic opportunities started in Jasper and continued with a visit to one of our favourite places the dinosaurs in the Royal Tyrell Museum in Drumheller. Then we headed off to Waterton Lakes National Park.

In Waterton we toured the town-site and then headed up to a picnic site at Cameron Lake. The setting was fantastic with the lake still frozen and Mount Custer, which is in Glacier National Park, Montana in the background. The Prince of Wales Hotel is on the shore of Waterton Lake and provides a wonderful subject to photograph. Wildlife is abundant but you have to watch out for the bears.

We turned east and drove through Chaplin, Saskatchewan, where hundreds of thousands of birds stop on their migration to the arctic. There are tours of the lake which has the largest surface deposit of sodium sulphate in North America. We did not have time to stop but I will make time when next we go through there.

From here we visited with family in Manitoba, (where I found a number of old barns) and headed south through North Dakota to Rapid City, South Dakota. The whole area is a photographic opportunity.

We spent one day driving through the Black Hills, Mt. Rushmore, and Crazy Horse. At Mt. Rushmore there was a citizenship ceremony going on. Crazy Horse is a work in progress, and some day will be similar to Mt. Rushmore with a mountain carved in the image of the famous native Chief Crazy Horse leading a charge on his horse.

We also spent a day in Deadwood and Sturgis. Deadwood is an old gold mining town where Wild Bill Hickok was gunned down. The town celebrates that event every day during the summer with gunfight shows for the tourists. Sturgis is famous for the gathering of Harley Davidson motorcycle riders once a year. In addition, the South Dakota Air and Space Museum (Ellsworth AFB, Rapid City, SD) has some of the original launch control modules for the MinuteMan ICBM missiles.

Next, we headed east through Minnesota to Wisconsin. A reoccurring photographic opportunity are the old Prairie Schooners. They are in fields, campgrounds and town centres. We followed the freeway east on the banks of the Mississippi to LaCross, Wisconsin. The area is very flat so the river is wide and flows slowly with bays, islands and backwaters. It is a water playground with fishing, jet skis, water-skiing and wake-boarding providing a great backdrop for taking pictures.

From there we drove across Wisconsin to Green Bay and stayed on Lake Michigan at Sturgeon Bay. The area reminded us of the small east coast villages with lots of picturesque shops and homes. From there we turned north and went around Lake Michigan. The road follows the lake and there are many opportunities to get pictures of the lake.

We took the Mackinac Bridge, headed south into Michigan and stayed near Lake Huron. The Mackinac Bridge is the world's third longest in total suspension length and longest suspension span between anchorages in the western hemisphere.

This area of Lake Huron is a resort area and there are many designated scenic drives. The area has ponds and creeks and I spent some time getting pictures of dragon flies, turtles, snakes and frogs. The weather had been very hot and it was around 40 degrees every day; it would stay that way for the next 2 weeks. It was now getting close to July 4th, so we had to make sure we had reservations for a few days. This was one of the few times during our trip when we made reservations.

We moved south to the Indiana/Ohio state line. This gave me the opportunity to get pictures of barns for the 49th state in our list, Ohio. I now have pictures of barns and farm houses from 49 states and 10 provinces.

Weather once again became an issue. We could hear thunder and it didn't stop; a 15 minute thunder roll was something to hear. Then there was a storm warning and we sat in the trailer and watched a very intense storm for about half an hour and then it was over. The storm blew over a couple of semis on the freeway 2 kilometres from where we were parked.

We were in Angola, Indiana and the Angola Balloon Festival happened that weekend. We would have liked to have stayed for it but there was no space in the campground. So we headed west. I did a photo trip to Marysville, Kansas and got some pictures of the original Pony Express Office. Once again we were on the prairies. It was flat and hot, and we saw a lot of corn fields.

We charged across the prairies and ended up in the high plains of Sidney, Nebraska. Signs in the campsite warned of rattlesnakes and tornadoes. From here I did a photo trip into northern Colorado and found a few old barns and homesteads.

Our next stop was Rock Springs, Wyoming. Above Rock Springs there is a ridge and a butte called Pilot Butte. I got some pictures of the butte and wild horses.

We drove through Utah, Idaho and mid-Oregon. We cut through Oregon on Highway 20. The first part of the drive is desert mountain terrain and very scenic. From Burns to Bend it is high desert and mainly sagebrush.

From there we had a short drive to Woodburn, Oregon. Next we went to the Evergreen Air & Space Museum, in McMinnville, Oregon, where the "Spruce Goose" (Hughes H-4 Hercules, the largest flying boat ever built) now resides. Their ever expanding collection includes a SR71 - Blackbird (reconnaissance aircraft: still the fastest aircraft in the world and it was designed in the 1950s) and their new additions of several space capsules. On the way back to the campground, I passed the Woodburn Dragstrip where the Mopar Nationals were taking place, a great opportunity to take pictures of cars going really fast.

From there we returned home. We had covered 70,000 kilometres over 13 months. We had changed time zones 26 times and I had 16,000 new pictures to process.

Once We Were Explorers

by Barbara Burns

The original of this image was of three "tall ships" sailing past Ogden Point at midday. Looking at the image, I imagined how often, many years ago, ships much like these would have passed by this very spot exploring the Pacific Northwest coastline. I decided to create an antiqued composite using Photoshop. For this image I used a tripod, my Canon 5D MkII camera and 24-70mm f2.8 L-lens. The settings were 30mm, f8, 1/160 second with ISO 100.

First I did the normal enhancement editing of the image. To begin the aging process, I rendered the image in sepia monochrome using Google's Nik Silver Efex Pro.

I dragged a copy of an old letter that was yellowed, stained and creased onto the tall ships image using Multiply blend mode. I dragged onto this an image of the full moon that I had photographed and selected earlier. I used Screen blend mode and then, using a brush with the same colour as the moon, I painted a halo around the moon and added a glow on the water.

I then dropped in a layer of selected seagulls (in Normal blend mode) also from an earlier photo and duplicated it several times. I played with the size and positioning of the seagulls until I was satisfied that they enhanced the composition.

I added two texture layers from other photos, cracked paint and distress/scratches in Multiply blend mode. I finished off with Level and Curves adjustment layers to get the tonal range and contrast I wanted and added a slight darkening vignette.

Impressions #1

by Garry Schaefer

My first experimentation with deliberate camera motion (DCM) came on an "Impressionistic Walkshop" lead by Lloyd Houghton. This shot was taken on a later trip in Beacon Hill Park. This technique requires a lot of experimentation. Sometimes a pleasant surprise awaits!

Lloyd had suggested that subjects with a vertical shape or lineal structure would be best with vertical camera motion during the exposure, with the expectation that some edges would remain relatively sharp while other features would show a soft blur.

Extending the shutter speed is key to DCM photography. Use a neutral density filter to block much of the ambient light. Then set the ISO to its lowest (base) value. Finally, use shutter-priority mode to set the exposure time desired. If using full manual mode, with the exposure time set, the aperture will need to be stopped down to achieve an appropriate overall exposure.

A suitable tree trunk was spotted, surrounded by an uncluttered grass-covered area. This image was shot at ISO 100 with a 3-stop ND filter, and a 1 second shutter speed at f20. The scene was scanned from top to bottom. The shutter was opened part way into the vertical sweep and the motion was continued just beyond the 1-second exposure.

Tuesday Shoots

by Blair Ross

The Tuesday morning group has some challenging themes scheduled for September and October. The intent of these shoots is to challenge each participant's artistic vision as well as technical abilities. Participants are given approximately ninety minutes to wander through the downtown core area and capture their images shooting either alone or with small groups.

September 10 - Manual Exposure: Still shooting in Auto Mode? The best way to take our photography to the next level is by making the jump to manual mode. Our automatic settings may get us close to what we want, but to get exactly what we want with our cameras we need to utilize our camera settings in manual mode. Use shutter, aperture and ISO individually to control the amount of light that reaches our cameras sensors and to manipulate the image. Subject is open.

September 24 - Architecture: Buildings have always been highly valued photographic subjects mirroring society's appreciation for architecture and its cultural significance. Photographing buildings either from the exterior or interior and ensuring that they are both aesthetically pleasing and are an accurate representation is today's challenge. The use of controlled perspective with an emphasis on vertical lines that are non-converging is a tenet of architectural photography and can best be achieved by the use of a tilt/shift (PC) lens or in post-processing. Also, depth of field should be employed to ensure both foreground and background are in sharp focus.

October 8 - Fall Colours: It's that time of the year again, prime time to capture downtown landscapes which have been transformed into vibrant yellow-orange and reds. Remember to use a circular polarizer to help reduce unwanted glare; slow shutter speeds to blur leaves; shoot backlit trees and branches; maybe use HDR; shoot wide open to throw the background out of focus; pan with blowing leaves to show a different kind of motion in your image or to give it an impressionistic look; experiment with your white balance to warm or cool your image.

October 22 - Spell a Word: Let's have some fun today and try to take pictures of something which represents each letter of a word. Put your thinking cap on and write down a word on a small piece of paper and we will draw a word from a hat at the beginning of our shoot.

Weekend Shoots

by Dave McLean and Donna Robertson

There are a number of field trips in the works for September and October, so please check the website Calendar page for details.

Whale watching: This trip will be limited to the space available on the boat (8 seats available in a 12-seat Zodiac) and registrations will be taken on a first-come, first-serve basis. The primary object will be whales, (Orcas and Humpbacks); we may also encounter sea lions, harbour seals, porpoises and a variety of birds.

Royal Roads: Fall colours, Architecture, Gardens and mushrooms. The grounds of Royal Roads offer something for everyone. Late September brings out the colours in a great variety of the trees on the property and in the gardens. The castle and other buildings provide great architectural opportunities for submissions for March's Theme Competition (Architecture). The Japanese and Italian gardens are full of colour and provide more shooting opportunities. There are also beautiful trails on the property that run adjacent to a small stream with a 10 foot waterfall. In the fall there is also a large variety of mushrooms growing in the area.

Saanich Historical Artifacts Society: Fall Threshing Fair, Sept. 14/15, 9am to 4pm at 7321 Lochside Drive (Pat Bay Highway at Island View Beach Road). A variety of photographic opportunities present themselves including agricultural equipment displays, old agricultural and industrial equipment, people, and don't forget the pond which should still have some dragonflies and Pacific Chorus Frogs just waiting for you.

Full Moon: September 19, we are in the process of finding a leader (or two) to do a twilight shoot.

Tofino Field Trip "Bears, Beaches and Rain Forests": October 18-20 Richard James is leading another field trip to Tofino and Ucluelet. The object is to shoot winter storms, beaches and the rain forests of Pacific Rim National Park and surrounding area.

If we get lucky and the salmon are spawning, we will also shoot black bears at Thornton Creek. Be sure to have not only rain gear for yourself but protective gear for your camera equipment. Sunshine isn't guaranteed, but rain is always a possibility. There may be "last-minute" space available for this trip.

The Long Shot

by Nancy MacNab

At some point, most photographers end up wanting to photograph a subject that is some distance away from them, whether it is a bird in a tree or a friend in the window of a building across the street. To do this, you can either move closer, which may not be possible, or use a longer lens (or crop to the desired subject size after the fact).

Moving closer can allow you to fill the frame with your subject, but some difficulties may include: a nervous or flighty subject that will disappear if you get too close, a dangerous subject that might injure you if you wander into range, and physical obstacles such as rivers or cliffs in the way. In that case, a longer lens is your best solution.

Remember that it is a combination of the lens focal length and the camera position relative to the subject which controls the apparent perspective. If you change either, then it changes the way the scene looks in your final image. Remember the effect if you use a very short lens very close to your portrait subject; it's quite distorted and unnatural but that is an extreme example. Telephoto lenses give the impression of a shorter distance between the foreground, middle-ground and background objects.

A "normal" lens has traditionally been a 50mm lens in film/full-frame camera terms (all focal lengths refer to "35mm equivalent," i.e. a 35mm lens on a DX crop body is equivalent to 50mm). This lens provides about the same field of view that a person will have, taking in neither more nor less than you do when you look at the view in a relaxed manner rather than focusing hard on a specific point.

A wide-angle lens is usually from about 35mm or less, with super-wide angle lenses being less than 20mm. Lenses over 75mm are usually considered telephoto lenses, ranging from short telephotos (75mm) to super-long telephotos (600mm and more).

Another consideration is the angle of view provided by your lens. A wide-angle lens may simply show too much of the surroundings around your subject for your liking, even if you do get closer. You might want that particular narrow range of view that a longer lens will provide, especially if your subject is between or beside something that you do not want included in your photo. Sometimes the best choice is to step back and use a longer lens.

Because of the narrower field of vision (effectively "magnification") provided by a telephoto lens, it is even more crucial to use a tripod. Longer lenses tend to be slower, so shutter speeds are longer and every tiny vibration and shake shows up in the photo. Fast long lenses are usually of a fixed focal length rather than zoom lenses, and are much heavier and much more expensive than their slower zoom cousins.

Telephoto zoom lenses up to 200 or 300mm are the usual choice due to their ready availability, usefulness in the range covered, comparatively light weight, and more reasonable price. If you are planning to buy a 500mm or 600mm lens, it may be a choice between the lens and your car as they are much more expensive ($6,200 - $12,600). And if you decide to go for one of Canon's 1200mm lenses, which were made to order, well, B&H Photo had a used one for sale a few years ago for $120,000.00, US of course! And as it weighs about 36 lbs, I would not recommend hand-holding it for shooting.

Telephotos are used by all kinds of photographers, from bird and wildlife photographers to paparazzi in hiding, waiting to get candid photos of their unsuspecting, and sometimes unwilling, subjects. They can help you photograph that spider and its web suspended between two chairs without incorporating the rest of the junk heap in which it was found. And it is also the best kind of lens to choose when photographing birds, bears and mountain goats.

If you have a telephoto lens of 200 or 300mm and are looking for more, then a teleconverter can add focal length without costing an arm or a leg, either in price or in weight to carry. Teleconverters usually come in 1.4 or 2 times power, so your 200mm lens will be equivalent to a 280mm or a 400mm lens when you use one. These consist of a magnifying lens inserted between your camera's body and the lens. It is considerably lighter than a longer lens, especially a fast longer lens. However, it does come at the cost of effectively slowing down the lens by one (1.4x) or two (2x) stops.

So, can you fill the frame of your camera's viewfinder when photographing a subject at a distance? Can you cut some of the clutter surrounding your subject by stepping back and using a telephoto lens? Or is "bigger glass" an item on your wish list this summer (Christmas is coming!).

by John Coenraads

In film photography, sharpening is rarely needed or performed due to the fineness of the grain and its random nature. Such is not the case in digital photography where the sensor consists of a rectangular array of pixel sensors, much coarser than any grain. During the demosaicing process, sharp edges inevitably get a little blurred giving a soft focus feeling to the image. Normally, this needs to be corrected either using your camera's built in software, or, better yet, by fine tuning it in an image editing program such as Photoshop or Lightroom.

When the eye detects an edge, the circuitry in the retina increases the contrast across the edge to make it stand out. (Google: Mach bands.) Photoshop capitalizes on this illusion by using sharpening to make an image appear less blurry. This is achieved by darkening a few pixels on the dark side of the edge and lightening a few pixels on the light side of the edge as illustrated in figure 1. In a) we see an intensity profile with a sharp transition from dark to light. But many factors, such as the anti-aliasing filter in front of the sensor, refraction errors due to the lens, and diffraction effects due to a small aperture conspire together to capture the blurry edge shown in b). Sharpening introduces a trough and a peak on opposite sides of the transition, c), which the eye sees as increased sharpness, although it must be emphasized that sharpening cannot, and does not, recover lost detail.

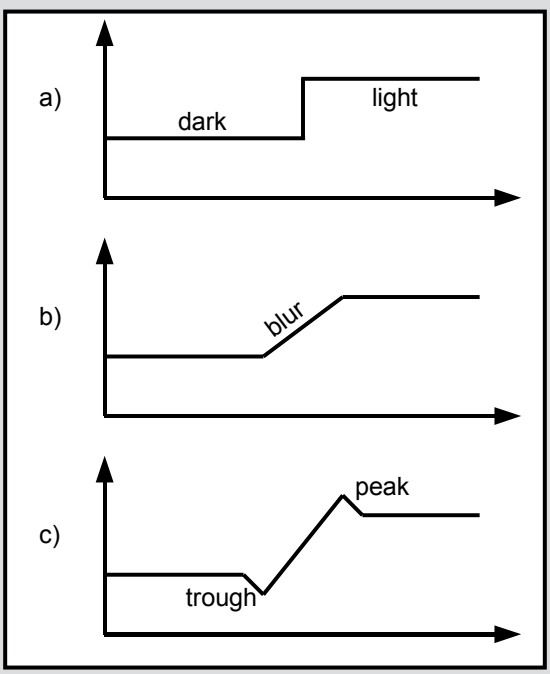


Figure 1: How sharpening works.

So, how does the software do this? One might think that this requires some pretty fancy programming, but such is not the case. The computation is known as convolution, but, despite the forbidding name, convolution involves only the simplest of arithmetic and sharpening is only one of several tricks it has up its sleeve. We will explore convolution in the belief that those who are privy to the inner workings of sharpening are more likely to use it well.

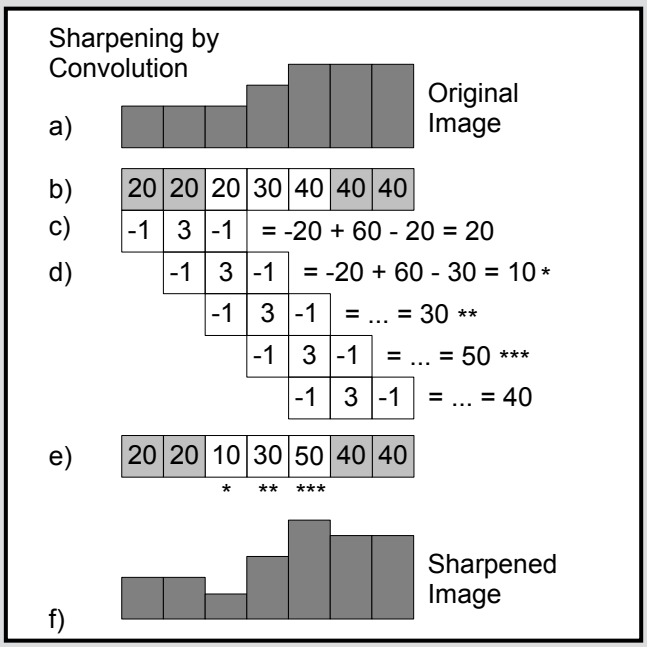


Figure 2: An example of sharpening using convolution. The final result shows the characteristic trough and peak indicative of sharpening.

Sharpening in One Dimension

A picture is of course two dimensional, but most of what we need to understand about sharpening can be explained using an example in one dimension, i.e., a single row of pixels. Key to the convolution computation is the choice of a convolution matrix. In one dimension, a simple sequence of three numbers, [-1,3,-1], makes for a suitable sharpening matrix. Figure 2 outlines the steps involved in computing the sharpened pixel values.

a) This example shows the intensity profile of a row of pixels including a transition from dark to light which is slightly blurred.

b) The pixel (intensity) values are listed here.

c) Centre the sharpening matrix under the second pixel and calculate the new pixel value as follows: multiply each element in the matrix by the corresponding pixel value and add the results together. (If you remember senior algebra, you may

recognize that we are calculating dot products.)

d) Next, move the sharpening matrix one pixel to the right and repeat the calculation. Then repeat this step for all remaining pixels.

e) Collect the new pixel values here.

f) Here we see the sharpened intensity profile using the new pixel values.

The fact that calculations this simple result in sharpening appears almost magical, but engineers are quite familiar with the use of convolution and apply it to all types of signal processing. The following website, *http://graphics.stanford.edu/courses/cs178-10/applets/convolution.html*, has a superb applet that lets you experiment with convolution. Be sure to scroll past the first page which contains *Really Scary Math*.

Sharpening Parameters

It is possible to specify any number of sharpening matrices each of which will result in a different effect. In general, a sharpening matrix will have larger centre values with smaller negative values on either side. And if we use values that add up to +1, then the scaling of the row of pixels is left unaltered. Photoshop lets us specify parameters that affect the size of the matrix, the magnitude of the numbers, the shape of the matrix, and its symmetry.

Under the sharpen filter, there are three options that use preset values: Sharpen, Sharpen Edges, and Sharpen More, optimized to produce the effects their names suggest. Only Smart Sharpen gives you direct control over the parameters.

In figure 3, we illustrate the effect that our choice of parameters has on the convolution matrix and the subsequent sharpening effect.

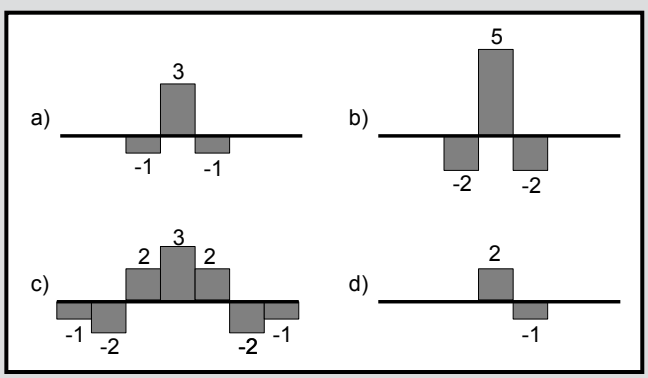


Figure 3: Sharpening matrices with different profiles result in different effects.

Amount: 1 - 500%

This controls the magnitude of the numbers used in the convolution array. In a) we plot the sharpening matrix used in our earlier example while b) shows the same matrix with the Amount Parameter increased. Not surprisingly, this increases the magnitude of the effect, i.e., deeper troughs and higher peaks, and the risk of oversharpening.

Radius: 0.1 px to 64.0 px

This parameter controls the size (width) of the convolution array and therefore how far it reaches to "sniff out" an edge. For example, c) has a "sharpening horizon" of three pixels, while a) only "looks" one pixel away. Consequently, this also determines the number of pixels surrounding the edge pixels affected by the sharpening. I.e., the blurrier the picture, the larger the required radius. But if the image is fairly sharp to begin with, a smaller radius is always better.

Remove: Gaussian/Lens Blur

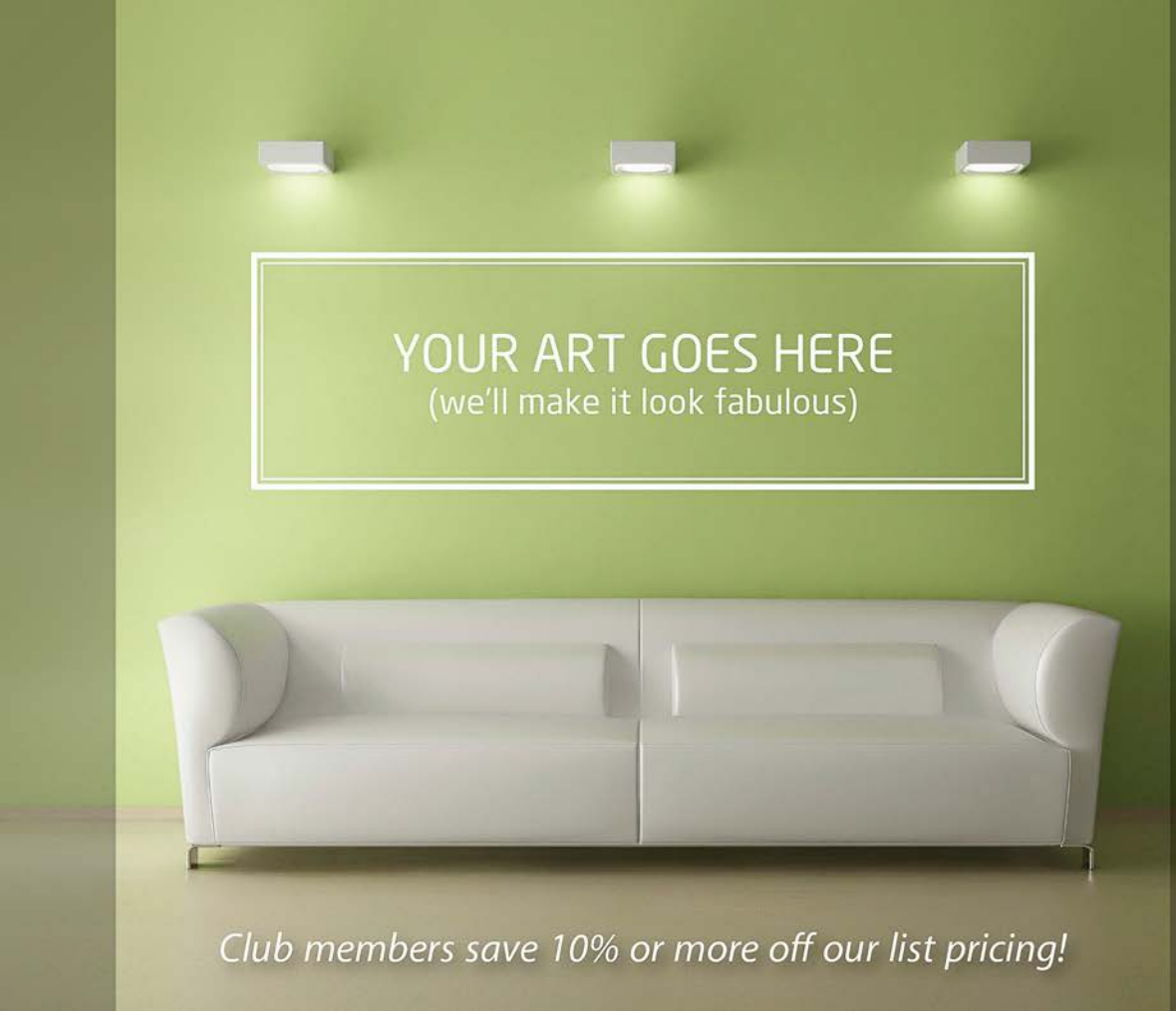
Here we take control of the shape of the sharpening matrix. If we think of the matrix profile as a mountain flanked by valleys, then Remove Lens Blur would have a steeper mountain and deeper valleys than Remove Gaussian Blur which would appear more eroded.

Remove: Motion Blur

Now we introduce asymmetry into the convolution matrix. The matrix illustrated by d) results in the sharpening producing peaks without troughs or troughs without peaks depending on whether the edge is rising or falling. At this point we can no longer ignore the fact that sharpening a two dimensional image involves the use of a two dimensional sharpening matrix. By introducing asymmetry into the matrix, we can "sensitize" it to blur in a particular direction. Remove Motion Blur lets you specify that direction so that you can preferentially sharpen a subject such as a running dog without applying the same degree of sharpening to the stationary part of the image.

Next month we tackle Unsharp Mask. In preparation, you may wish to repeat the convolution calculation in figure 2 using [1,3,1] and [-1,2,-1] as the convolution matrices. The results are interesting.

Note that the degree of sharpening required is dependent on the image content (fine, medium or coarse detail etc.) as well as the final output media (web/projected/LCD screen, inkjet, offset printing etc.).



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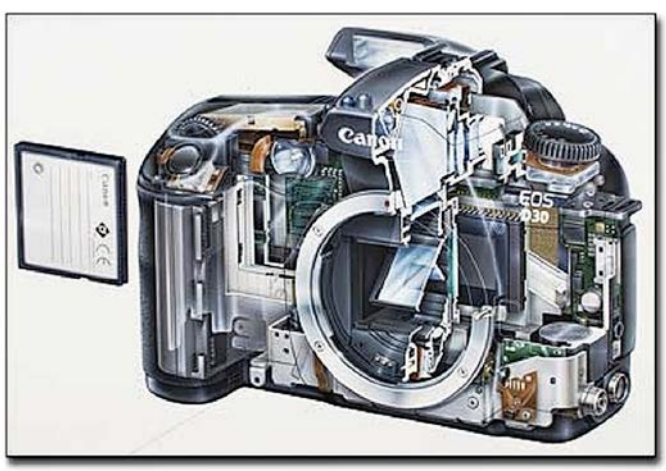

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