"CAPTURE – MOVING FROM IDEAS TO IMAGE DATA" BY MICHAEL SMYTH

This tutorial steps through the process of converting our image concept into captured data, ready for processing and enhancement into a resolved image.

INTRODUCTION

Capture is the first part of the process of turning an idea or concept into a resolved image. It is NOT the image, merely the data that goes towards making an image. In essence, it is the "Digital Negative".

Photographers who learnt their skills using transparency film have been brought up thinking that once the shutter is pressed, the image is more or less complete. In the digital age, we have new tools at our disposal and the image making process continues from the capture stage to the processing and enhancement activities that will result In the creation of a completed image. To continue the film analogy, Process and enhancement equate to the processing of the film and all of the darkroom work that goes to making a photographic print.

Capture entails the bringing together of two fundamental elements that go towards making an image:

(a) A representation of something that is "real" recorded by the photographer and
(b) The photographer's interpretation of the subject.

This representation is locked in a moment of time, in the past. Therefore we have to have a clear understanding of what we are capturing and how the capture will impact the process of making an image. Once we return to our "Digital Darkroom" the capture is all we have to work with in creating our image.

Painters can paint from memory or imagination, but photographic images must be created from the data made *in* the location *and* at the *time* of capture. This is the most important difference between photography and painting.

Fundamental to the creation of an artistic photograph is experiencing the subject and setting (background) *first hand*. Our viewers do not share this experience, so it is important to ensure our image is not just a static documentation of the subject, but includes the "mood" and feelings the photographer experienced at the moment of capture.

WHAT WE ARE GOING TO COVER

This section deals only with the *Capture* activities and the decisions made here will largely determine what can be done with the image data during processing and enhancement.

In this tutorial we are going to cover the following:

Understanding what image capture is really all about.
Looking at how human vision translates into photographic images.
Capture considerations: Timing, subjects, technical limitations
Compositional considerations
Photographic techniques and equipment choices during capture.

We will finish with a recommended methodology for ensuring your capture will allow you the freedom to process and enhance your creation into the resolved image.

WHAT DOES CAPTURE COMPRISE?

Capture is the process of translating the "concept" from the visualised image into captured data. Note: this is not creating an image, but the data that is used to build an image during the Processing and Enhancement phase of image making.

This process of image capture is the first stage in the transfer of the pre visualised concept into a physical image. It is important to remember one central concept: All captured image data needs processing and enhancement to produce a resolved image.

The process of data capture cannot proceed without a clear concept. Without a clear concept or idea and an understanding of the capture process, you will end up with a weak image that has no clear purpose and no story to tell.

There are numerous considerations that need to be borne in mind during the capture process and the photographer needs to understand which decisions effectively "lock in" image data and which decisions can leave the creative process open for processing and enhancement. We will look at these later.

The photographer needs to have a thorough understanding of both their equipment and controls used for creative capture as well as an understanding of the photographic principles of composition, selection, reduction, viewpoint, timing and framing in order to move through the process or realising their conceptualised vision.

Before we can move on to the principles involved in image capture, we need to understand the differences between what we see and what our camera records.

HUMAN VISION AND CAMERA VISION

What we see (or think we see) differs from what the camera can record in a number of ways. It is important to know and understand these differences before we start trying to record data.

Camera vision differs from what we "see" in several important ways:

Viewpoint: We see everything – wherever our eye travels we think we see clearly and in full colour. In reality, we only see a very narrow field of vision in sharp detail and full colour, but our mind fills in the details (also known as persistence of vision).

How we think we see

How we actually see

***Binocular vision*:** We see in stereo so we automatically have a perception of depth.

In a photograph we need to provide clues to create the perception of depth for our viewers. When we photograph a landscape we try to record detail throughout so our eye can travel around the image to rest wherever we choose.

Capturing extreme depth of field can counter the sense of depth as near and far objects will all be sharp. In order to provide clues about depth we need to use a view point that clearly shows the relative scale of objects.

A foreground object in a landscape is an important compositional tool that creates a reference point for us to work out distance and depth.

Colour balance: Our eyes automatically adjust for differing colour temperatures, however when we see a photo we are immediately aware of a colour cast as our mind recognises the image as not being real, so does not attempt to colour correct. We need to take special care to present the colour balance in our image the way we want it to be perceived.

***Position*:** When we look at a scene we instinctively move around to change the point of view. When the image is captured the point of view is locked in. We therefore should examine alternative viewing positions before capture, or at least capture several alternatives for later consideration.

Framing: We can turn in any direction and see what is around us. A camera frame is an arbitrary constriction on our viewpoint derived from our art heritage (photographic frames derive from the painting canvass). There is really no reason why a photograph shouldn't be circular or elliptical, "portrait", "landscape" or any shape for that matter. By placing the camera to our eye we instantly apply a frame to our subject as well as moving from binocular to monocular vision.

Movement: A moving subject (say a stream) is seen by us as a moving part of the landscape, however depending on our technical choices (shutter speed), this movement can be either "frozen" or blurred. Our choice of whether to show or ignore movement in an image will depend on how we visualise the final resolved image.

Freeze the action, or

Blur for effect

Contrast: Our eyes can adjust to very large differences in brightness and contrast. Digital sensors have a limited ability to record contrast (up to 9 stops for optimised RAW captures).

Isolation: By selectively focusing on a part of a scene we emphasise that part to concentrate our viewer's attention. Our eyes will concentrate on a point of interest in a scene. If we want to present this "centre of focus" to our viewer, we need to consider depth of field and focus point. We also need to look all around the frame before making a capture as we tend to ignore parts of the scene that may later prove to be distractions or be unnecessary for the final image.

Why is this important ? In our conceptual stage our mind processes the scene before us and isolates, selects and emphasises parts of the image without our conscious knowledge of the process.

If we fail to understand these processes we will capture something that is nothing like our visualised image and be disappointed with the results.

It is also important to note that the simple process of placing the camera to our eye immediately introduces a change from what we see. At once we change from binocular to monocular vision. All sense of depth disappears. We also introduce a frame to contain the image. Take time to use the viewfinder to examine possible compositions, framing and viewpoints.

It is now time to consider how we are going to make a capture.

CAPTURE CONSIDERATIONS

Before we can attempt to start mucking about with cameras, lenses and other equipment, we need to understand the specific considerations that need to be applied to the subject in hand.

THE SUBJECT

Central to all image making is a subject. The photographer needs to clearly understand who or what the subject is and how that subject is to be represented in the final image. This is part of the visualisation process.

There is an important relationship between the photographer and subject. Many people in the digital age are not attuned to their subject sufficiently before they attempt to capture an image. The result is often a weak image or one that is dissociated from the subject, with no interpretation, emotion or empathy evident.

A portrait session is very much a cooperative process between the subject and photographer if the image is to be a worthy expression of the subject's character.

Likewise a landscape subject requires the photographer to respond to the "feeling of place" and take time to sense and feel what the landscape is telling them in order to make an effective image.

Some specific considerations are relevant:

People:
When photographing people it is essential to have the permission and cooperation of the person being photographed.

Portrait photography is an intimate and cooperative process. The subject should be fully informed and take part ownership of the creative process. A clear understanding of the goals and purpose of the session will assist in a productive portrait session.

Where the subject is not known to the photographer (street photography etc) some tacit acknowledgement of the photographer by the subject may be all that is possible, however it is essential to respect the rights and privacy of individuals and if they do not want to be photographed, you should respect their request.

In particular, photographing people in desperate or downtrodden situations requires a degree of empathy, and depending on the final use of the image, may be an exploitation of the subject. The ethics of image making should be paramount in these situations and the photographer should be sure that the use of the image will in no way further exploit a powerless subject.

Photographing children has now become a difficult subject as public paranoia regarding rampant paedophiles labels anyone photographing children as a potential pervert. Be aware of rabid parents and do-gooders.

Animals: Animals need to be treated in a similar manner to people.

Take time to gain the confidence, or at least allow the subject to become relaxed in your presence.

Animals will pose if you take the time to understand them and gain their trust.

Buildings, Artworks and structures:
Some buildings and locations may require special permission before photographing them. Security considerations, particularly in overseas locations mean that some things are "off limits". Other buildings and national monuments may require permission to photograph (Uluru).

We should always bear in mind the principle of interpreting and adding elements of your style into your images of someone else's "art".

The ownership of the creative process is paramount and a literal photographic record of a building, structure or artwork is not your own creation and can't be considered your "work of art".

TIMING
Timing is everything. One element outside of the studio that cannot be changed is the time of day and hence the lighting. You need to understand whether the time of day is critical to your image making. Many a great image has been lost because of the attractions of the doona or just plain bad timing. Be prepared for the "right" light and be sure of your technical processes so you don't get caught napping with the wrong settings.

Managing the time of day, and hence your lighting conditions will dramatically affect the mood, depth and colour representation of your subject. Do you want sunset or sunrise lighting ? Plan ahead for the conditions you need.

LOCATION
If your subject is at a location other than your studio (or backyard) you are going to need to consider not only what equipment to take, but how you are going to get there. There are many practical considerations: If you are going trekking in the high alps, you probably don't want to carry 20kgs of camera gear. Likewise, if you are going on a big game safari, you are not going to capture animal close ups with a "point and shoot" camera. Plan ahead and work to the limitations of your equipment.

COMPOSITION

At all times during the process of composition selection, the photographer should be referring to the conceptualised image (concept). In some cases this conceptualisation will be modified as a result of technical limitations or options not considered previously.

This process of referral to the concept and adjustment of composition is ongoing throughout the capture phase. The photographer also needs to consider matters of their personal style and how it is reflected in the image capture.

Critical compositional choices at the time of capture will have a huge impact on the final image. Choices of viewpoint, framing, perspective focus point and depth of field are all critical. These considerations cannot be readily modified during the enhancement phase, so require careful selection:

***Composition and framing*:** What to include or not include. A fundamental rule of photography is to isolate your subject, simplify the composition and to get close enough to the subject to make them the central part of the image. All these rules should serve the purpose of the concept. When framing the subject you should examine all possible alternative viewpoints and positions (time permitting). If unsure of how your subject will be finally resolved, make captures of alternative compositions.

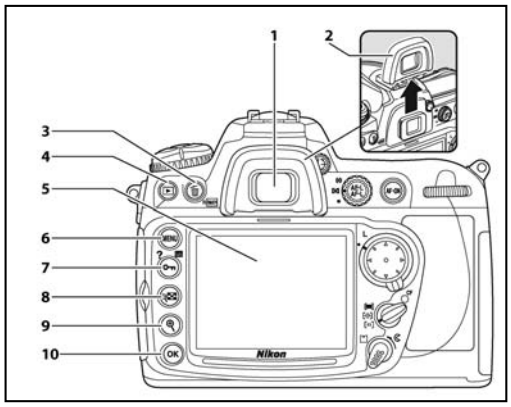
Perspective: In a two dimensional image, it is important to decide how (and if) perspective is to be handled. For creativity it may be useful to compress, expand or ignore perspective totally. Placement of elements in the frame can aid a sense of perspective, as will depth of field and focus point.

Focus point and depth of field: It is easy to be fooled by the way our eye works and fail to consider the mechanics of depth of field. Be aware that a shallow depth of field can isolate a subject and draw the viewer's attention to the part of the image you want to emphasise. Large depth of field is important when trying to impart a sense of depth and distance.

Lighting: The use of natural and/or artificial lighting is critical to the recording of image data. The direction, quality, colour and intensity of your light source/s all need to be considered carefully. The use of additional light sources, such as reflectors, diffusers, fill flash etc all need to be considered.

TECHNICAL CONSIDERATIONS

Understanding the uses, limitations and properties of your equipment is as important as understanding the compositional aspects of image making.



All photographers should have a good working knowledge of the equipment before they embark on an image making exercise. You need to know to operate all of the settings that will affect the captured data. As a minimum, know how to adjust aperture, shutter speed, ISO, flash, metering and exposure.

Fundamental to capture is knowing how to maximise your image data and to keep this data open for enhancement.

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There are several technical considerations that will either positively or negatively affect the options for image processing and enhancement. Some choices will leave options open for later revision during process/enhancement and should be used wherever possible.

Capture settings designed to maximise data collection are:

Capture format: Always capture RAW data. JPEG capture has too many compromises and no advantages other than smaller file size. Don't waste your time with JPEGs.

You should be aware that most of the R&D carried out by Adobe and others is in the area of RAW processing. If you are not capturing RAW you are compromising your data.

Image/file size: Always use the full sensor size. If you are short of storage media delete images that are not optimal before changing capture size. Why is this even a consideration ?

Image size is measured in pixels. Choose from the following options:

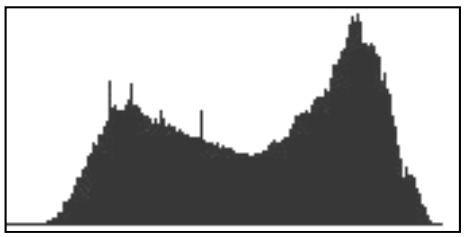
Option	Size (pixels)	Size when printed at 200 dpi (approx.)*
L (default)	4,288 × 2,848	54.5 × 36.2 cm (21.4 × 14.2 in.)
M	3,216 × 2,136	40.8 × 27.1 cm (16.1 × 10.7 in.)
S	2,144 × 1,424	27.2 × 18.1 cm (10.7 × 7.1 in.)

Because some people don't set up their equipment correctly so don't know if they are capturing full size images or not.

ISO settings. Noise and Sharpness: Always use the lowest possible ISO setting to minimise noise and artefacts. Combine with tripod for shake minimisation. Be aware of long exposure noise factors. High ISO and/or long exposure equals *NOISE*. Reducing noise in the processing phase will reduce sharpness.

Camera movement or no movement including zoom effects: If the camera should be steady, make sure it is. If camera movement enhances creative options, use it deliberately. Don't be half hearted with movement – otherwise it looks like a mistake. Using a tripod can be a pain, but the time taken in setting up can give you time to think more about your composition and framing.

Exposure: Always expose "To the Right" for maximum data capture. (keep your exposure as far into the right side, the highlights, without burning out). New digital SLRs can capture up to 9 stops of brightness, if used correctly. Check for under/over exposure. The histogram is your most valuable tool, take test exposures and adjust exposures accordingly.



Learn to love the Histogram. Avoid too much over or under exposure. It is always better to avoid clipping highlights rather than blocking up shadows. Highlight recovery in the RAW processing stage can retrieve some details, but if more than one channel (R, G, or B) is clipped the recovered highlights will lack colour accuracy.

White Balance: All Digital cameras are poor at Auto white balance so you should never rely on it. This applies to all brands and all models. Choose the appropriate manual white balance setting (not absolutely necessary for RAW capture) but a good habit to learn as it teaches you to think about the qualities of the lighting. For accurate white balance in processing use a white or grey card in a test capture.

Decisions that "leave open" creative options: RAW capture leaves open: White balance and colour space, tone mapping, sharpness and detail extraction, noise reduction, exposure recovery and bit depth. All of these can be adjusted for creative effect in the processing stage, whilst you can see a preview of the effect.

JPEG capture clips highlights and shadows, applies a fixed contrast curve, locks in sharpness and noise, restricts white balance changes, locks in 8 bit data and prevents any highlight recovery. All in all a nasty proposition and really only for phone cameras and amateurs.

If you have restrictions on storage capacity, get a bigger memory card.

RECOMMENDED METHODOLOGY

Here are my "rules" for best practice:

#1. Take time to "tune in" to your subject. Don't rush the process. Think before you shoot

#2. Work with your subject and involve them (people and animals) in the process. Yes, animals can pose too.

#3. Work the concept and explore alternative compositions and viewpoints for creative flexibility. Take alternative image compositions for consideration later.

#4. Maximise image data for the most flexibility in the processing and enhancement phase.

#5. Use a tripod to allow careful framing, composition and to hold your camera still. The time taken to set up your tripod can often allow you to think more about your subject and composition.

#6. Use movement deliberately or make sure the camera is steady. If you intend to use camera movement (panning or other movements) make sure it is obvious that this is what you intended. If you are going to allow your subject of parts of the composition to blur with their own movement, again, make sure it is obvious.

#7. Always capture RAW data for the most flexible options for later processing. Forget about JPEGs !

#8. Think about the timing. Once data has been captured, time is "locked in" Think about how and if the timing will affect your image – waiting for the right light is worth it, if you have the option.

#9. Use lighting for creativity. Be aware of light qualities, direction, colour and intensity. Light is your paintbrush so use it effectively.

#10. Photograph what you ***feel*** about a subject, not just what you ***see***. Think about what you feel in response to a subject and try to capture data that will allow you to produce the image worthy of the concept.

#11. Develop your own style and way of "Seeing".

#12. Do what you love and love what you do. Don't copy other people, do your own thing and don't be afraid to think outside the square.

Now we are ready to take our Capture data, process and enhance it to create our resolved image.