Operating Manual for the Mindful Photographer

Ed Heckerman

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Contents

Part 1 — Insights and Aspirations

Introduction

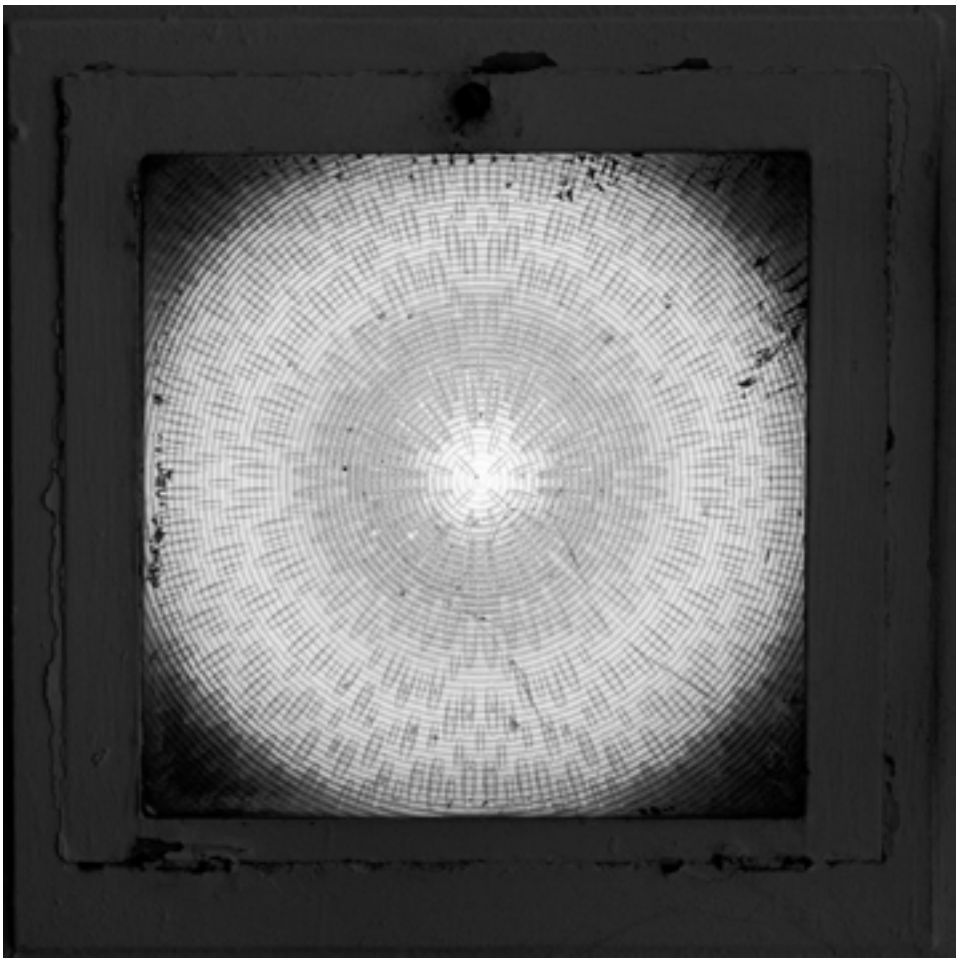
Learning photography happens four ways. Firstly, by taking a lot of pictures. Secondly, by looking at a lot of pictures in exhibitions, in books, and in the world. Thirdly, by getting advice from teachers, who can considerably speed up the process of helping those who are open to learning. Fourthly, by reading about photography in all its myriad aspects. This book is intended to be a resource to help you learn. It is not a recipe book for good pictures. You should not blindly believe what is written here, but verify the claims made here yourself through your own experience. The author of this text is often far from mainstream in his opinions and methods. Take from this what is useful.

Contrary to popular opinion, photography is not, and never has been, entirely mechanical and objective. Whenever we look at a photograph that we don't like or think is untrue is some way, we are acknowledging the fact that the photographer could have made different choices to make the picture better or more true.[1] The purpose of this book is to help you make sound choices in the process of making photographs. All of us already know how to take pictures robotically with cameras designed to eliminate the possibility of choices. This is not to say that having more choices is always better. Sometimes cameras are overly complicated, offering many frivolous choices that the photographer needs to ignore. So the assumption of the author is that you want to know what choices are meaningful and how to intelligently and creatively arrive at consistent results. In the service of this goal, this book will encourage the reader to look into what photography is and what its relationship is to art. The text will also explore the many reasons why we make photographs. The bulk of the book will cover the craft of photography, both analog and digital. However, technique will not be venerated as an end in itself, but rather as a support for whatever the photographer is endeavoring to show and evoke. In other words, this text will be a tool to help the aspiring photographer learn how to make and apply meaningful choices. The heart of the matter will always return to the practice of photographing with mindfulness — remaining present in the ongoing moment[2] and remembering the task at hand with introspection and contemplative awareness. It will require effort to reach a point where photography done consciously comes effortlessly.

It may surprise the reader that this book covers both analog photography (shooting film and doing traditional wet darkroom work), and also digital photography. The author is well aware that in popular culture and commercial photography digital is the status quo. An amateur or commercial photographer has no choice but to embrace the values of the industry, and that means working digitally. However, artists do have a choice. This book is a support for those choices.

1 Joel Snyder, *Photography without Ontology,* Critical Inquiry: Studies in Visual Communication,(Winter, 1984), University of Chicago.

2 The *Ongoing Moment* is the name of a book about photography by Geoff Dyer, Pantheon Books, New York, 2005.



What is Photography?

The English word "photography"[1] is derived from two Greek words: *phos* meaning light and *graphie* meaning to write, draw, delinate, and mark. Photography literally means to mark with light. Light is something natural, and marking is cultural. The word photography is unique and strange in that it brings these two seemingly opposite things together.[2] Like *Frankenstein*, written around two decades before photography was invented, photography brings the dead back to life.[3]

In Japanese, the word for photography is *satsuei*, which means "taking a shadow." Curiously, photographers of Native Americans, such as Edward Curtis (1868 - 1952) were often called "shadow catchers" by many tribes.[4] Photography is a *technology* that traces and transforms[5] appearances through the agency of light and shadow. Technology in this sense means the ability to do something. The technology for photography can be extremely dumb or smart, simple or complex. Both film and digital sensors are sensitive to light. Photography is a technology that depends on light.[6]

Photography is a *process* through which photographs are made. It can be a subtractive, additive, or hybrid process. As a subtractive process, the photographer explores, deciding what to include and exclude from the frame. The photographer subtracts something from everything. However, in the studio it is possible to set up the camera with a plain background in such a way that one looks through the viewfinder and sees nothing but the background. Then the photographer can add things in front of the background and arrange them, thereby using photography as an additive process. In cinema and

directorial photography photographers often operate in a hybrid mode. That is to say, they scout out a site and then arrange things within that site.

In addition to being a technology, photography is also a *practice* — something you do. The spheres of photographic practice are amateur, professional, fine art, and photo-based art. If you take snapshots of your family and friends, you are an amateur photographer. If you take pictures for money, you are a professional photographer. If you take pictures for exhibition in galleries wherein the photograph is seen as an art object, you are a fine art photographer. If you take or use pictures for use in art projects wherein the photographs function as common cultural artifacts, you are a photo-based artist. The spheres of photographic practice often overlap.

Photography is an *industry*. The availability of cameras and photographic materials is intimately bound up with consumer demand, but even more so with corporate profit. This is why photography is expensive and why products photographers depend on come and go. Photography is like a drug insofar as it can be habit forming, intoxicating, and expensive. The industry is the dealer. As stated earlier, artists should question the values of the industry. Commercial photographers do not have this option. They must embrace the values of the industry whether they like them or not.

Photography is a *vehicle* for grasping or sharing. The document takes; the image gives — photography is always a matter of give and take in union. When we pay attention to an image as a trace of appearances, we generally use it as documentary evidence. When we place emphasis on a photograph as something that exemplifies and alters, rendering the ordinary in an extraordinary way, or as a construction of reality, we usually use it as art — a transformation of appearances. However, all photographs trace and transform, all photographic images unite these two ways.[7]

Photography is a technology, process, hobby, profession, art, industry, and vehicle. Like any other art, it is more an experience than a thing or activity. Most people think of it as a way of capturing or holding something, but actually photography is evidence of impermanence. When we look at the picture and reflect upon the moment it was taken, that person, that place, that instant has already become something else. One of the many uses of photography is to picture the vanishing, everything around us that will sooner or later disappear.

Photography is potentially fun. The practice of mindful photography helps to keep the joy alive.

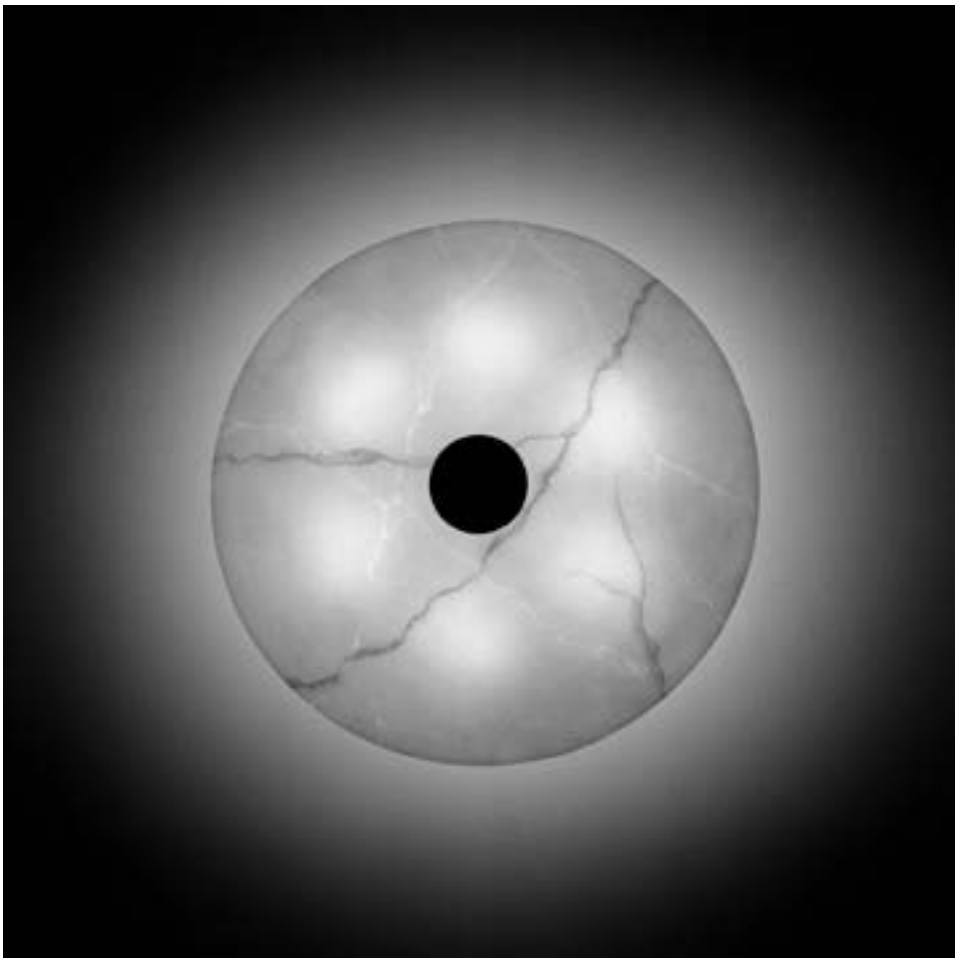
What is a Photograph?

A photograph is always one of three things: a fixed surface, an incident display on a monitor, or a reflected projection marked with light. It is always a trace and transformation of appearances. It is always in some way constructed, which is to say, the consequence of a number of causes and decisions.

Sometimes, but not always, a photograph is a record, a way of keeping something. Most of the time, it is a depiction, a way of showing. At times, it can function as a celebration, as decoration, or as a fetish. In semiotic terms, it can operate as an iconic sign, an indexical sign, and also symbolically as a visual metaphor or metonym, inviting the viewer to imagine something not pictured. A photograph is used cognitively for proof, pleasure, persuasion, remembering, forgetting, or devotion. The photograph merges fact and artifact. A photograph is evidence of impermanence, not proof of anything tangible.

Motivations — Why Make Photographs?

The short answer is — desire. Without the spark and fire of desire a photograph would not happen. Other reasons to expose and capture photographically include lust, greed, pride, and power fueled by ignorance. So is photography hopelessly caught up with emotional afflictions? There seems to be an innate need for human beings to mark, which is somehow related to fascination which is an aspect of desire. Children feel compelled to mark before they can even walk. As we get older we can learn to use photographs to communicate visual information. Photographs are much better than words at showing how something looks. Documentary photography at its best is the straightforward showing of evidence, visual history in the making. However, a photograph is not worth a thousand words, as the saying goes. If you want to tell something specific, words are much more precise. Still, sometimes artists use photographs as a kind of visual poetry to reveal hidden intentions or to obliquely picture fascination. Other more academic artists use their pictures to comment on pictures from the history of photography. To participate in that kind of collective conversation within various art worlds[9] is called a *discourse*. Usually, photo-based artists who are interested in using photographs as part and parcel of their projects see them as common artifacts, a kind of social currency, and they often use other people's pictures instead of making new ones.[10] Still others use photography as a form of activism, picturing the oppressed and their oppressors. All of these various reasons for doing photography and many more will be addressed at length in the third section of this book.



1 The word "photography" was coined by Sir John Herschell, and others.

2 Historically, we can see the merging of Romanticism and Positivism at this time.

3 *Frankenstein* was written by Mary Shelly, and published in 1818.

4 This reflected their belief that photography stole part of their essence.

5 *Trace & Transformation: American Criticism of Photography in the Modernist Period,* is a book by Joel Eisinger, published by University of New Mexico Press, Albuquerque, 1995.

6 It should be noted that Photoshop animation has made it possible to simulate the look of photographs where no event in space-time actually ever took place.

7 A painting by Joseph Wright, completed in 1785, called "The Corinthian Maid," shows two young lovers. The man is about to go to war and perhaps never return. The woman traces his shadow, so as to have a likeness of him. The painting was owned by by the father of Thomas Wedgwood, one of the inventors of photography. I make reference to it here to demonstrate the interest of fixing a trace directly from appearances that became a kind of obsession of the period that preceded the invention of photography. This observation was sourced from the book *Burning With Desire: The Conception of Photography* by Geoffrey Batchen, MIT Press, 1997.

8 As Duane Michaels put it, photography is a matter of "now becoming then." This is also the title of one of his best books, co-authored by Max Kozloff, published by Twin Palms Publishers, Altadena, 1990.

9 An "Art World" is a term used to describe a circle of artists, galleries, collectors, and a general audience with similar attitudes about art. The sociologist Howard S. Becker wrote an excellent book on the subject in 1982, published by the University of California Press.

10 In the art world this is know as "appropriation." In the legal world it is know as "stealing."

Photography and Mindfulness

Mindful photography is a sensibility, not a style. What is mindfulness? The meaning of mindfulness varies greatly according to context. It is often used incorrectly, particularly by contemporary psychologists. The origins of the term mindfulness comes from Buddhism. The word *mindfulness* is a translation into English of the Buddhist Sanskrit[1] term *sati*. Mindfulness is a way of observing that can be applied to many forms and levels of meditation. Essentially, it means to sustain an ongoing attentive recollection — that is to say, to remember the purpose of a virtuous endeavor that one has engaged in with unwavering awareness and then, through the power of introspection[2], return to that focus with clear comprehension when one has strayed. Mindfulness is the opposite of forgetfulness. Mindfulness takes place in a calm, balanced, vivid, and guarded mind that does not drift. As the term mindfulness has been secularized, it has been misunderstood as a kind of bare attention. B. Alan Wallace, a Buddhist scholar and teacher, has accurately pointed out that "Mindfulness can be used to *sustain* bare attention,[3] but nowhere do traditional sources *equate* mindfulness with such attention."[4] Traditionally, the term *sati* or mindfulness is connected to supporting a wholesome state of mind.[5]

The undistracted photographer with a mind focused on taking and making pictures is likely to be more effective than the multi-tasking scatterbrained photographer. Bare attention alone will not produce a photograph. It is incomplete. When photographers take their cameras out into the world, they endeavor through mindfulness to remember to sustain a

basic attentiveness in the present moment and, through coming into the groove of that zone, as we say, picture the unnoticed, see the overlooked, and translate that seeing into a compelling photograph. Anyone who has been there knows this state. It's a good place to be. It is not ethically neutral, like bare attention, but rather joyous and awake. Conversely, a mind chock-full of mental affliction is likely to make disturbing pictures. To perfect[6] our practice of mindful photography we must go beyond self-interest and mistaken interpretation and learn to see what is in front of us without projections.

In practical terms, mindful photography involves no drive-by shootings. You need to slow down and take a walk with your camera. Get off your skateboard, turn off your cell phone, and take off your headphones. Dedicate some time to the practice of taking pictures, and then continue with that in a relaxed way without forgetting. Don't rush, but rather find your own rhythm.[7] When you see something that might make a potential photograph, don't think too much. Just take the picture without fuss or grasping. If you start asking yourself "Why am I taking this picture?" then in all likelihood you will not take it. A few minutes later you will regret it, but it will be too late. The light or situation will have changed and the window of opportunity will be gone. There is plenty of time before and after the short hours we have dedicated to taking pictures to analyze why we took and how we shall use our photographs. But while working in the field it is better to trust your intuition and focus on your craft with unwavering attention and confidence. Empty the mind of discursive thoughts and practice mindfulness. Once you have taken the first picture, many more will follow. You have to get past that first obstacle of the skeptical mind that doesn't care about anything except the next distraction. In a very positive sense, mindful photography is about being aware without forgetting that we want to share the fruits of that awareness by making awesome pictures. Taking pictures happens within the fabric of the ongoing moment. We need to be aware within that process, as we see and make choices, remembering our purpose. If we are fettered with preconceptions and unreasonable expectations, or too lazy to learn our craft, not much will come of it.

Practicing photography with mindfulness sounds at first like a very introspective, perhaps self-indulgent act. Indeed, it could become exactly that if one does not start off with the aspiration to help others, even if one has no clear idea how to help them. In actual fact, mindful photography can open one up to the world and become a tool for learning and the possibility of sharing what one has seen and learned. The mindful photographer begins to see things that others have ignored: the broken green glass behind the abandoned hospital; the rusty wheelbarrow beside the abandoned swimming pool; the railroad tracks dissolving into pavement; the sign indicating that the non-native plants at the beach have been sprayed with killer weed chemicals; the sad yet hearty trees struggling beside the littered freeway. Sometimes when exploring with our cameras people seem threatened or puzzled by our photographic inquiries. Perhaps, they think we might be the repo man or deep down mistrust why we would care in a world all too uncaring. Mindful photography will only work if you can loosen the tight grip of the ego and have confidence that something will be revealed; trust in the potency of undistracted clear seeing pregnant with purpose. A good photograph begins before you leave the front door. It begins with readiness, preparedness, and knowledge, and most importantly with an attitude of willingness to explore the unknown.

Meditation can be a support for everything, including photography. If one practices meditation enough, then post-meditation[8] becomes the most important part of spiritual practice within which you bring the calmness and clarity of meditation into photography, or anything else one does. The purpose of meditation is to tame the mind and remove the obscurations that veil one's intrinsic nature. That subject is beyond the scope and theme of this text,

however, many of the methods used in meditation are useful for the practice of art. One of the foundation meditation practices is called *shamatha*, often translated as *calm abiding*. Mindfulness can only function with the support of a calm mind. If the mind is agitated, it cannot focus. Therefore, it is important to learn some methods that help the mind abide calmly. A mind involved with distractions cannot settle into its base. The first thing that will contribute to a calm and stable mind is to refrain from harming others and from engaging in negative activities that stir up the worst in ourselves. Secondly, we can focus our aspirations and activities on being helpful and engaging in virtuous actions.

When we dwell in the past and dream of the future, we cannot fully concentrate on the present moment.[9] Photography always takes place in the present moment. A mind that can remain continuously in the present moment has been tamed. How do we get there? How can we pacify all the inner noise so that we can better focus our attention? We must accept that the noise of our mind will arise, abide, and eventually dissolve. It will run its course if you don't interfere with it by following a chain of thoughts. The mind never stops, yet it is possible to purify coarse and subtle thoughts and emotions and settle our chattering minds. When that takes place one is not left with a blankness, but rather a continual source of creativity. Once these waves have settled into stillness, our powers of concentration will be greatly sharpened. Our minds will be more pliant and serviceable for practicing awareness in the present moment, wherever we may find ourselves.

Calm abiding will help us accept impermanence, find grace and confidence in ourselves, and anchor ourselves in the present moment. In a nutshell, hopes, fears, expectations, daydreams, and all varieties of hot air will arise in the mind, and we need to simply get in the habit of letting go. Then we can see what is in front of us, not what we imagine to be in front of us through the filter of our projections. Simply remain in the flow of the mind as it is. Let thoughts come and go. Let them be. Let the mud of discursive thoughts settle. If you leave muddy water alone, rather than mixing it up, then the impurities will settle and the water will become clear. Give suppressed thoughts freedom. Let thoughts change without interference. Experience the impermanence and emptiness of thoughts. Watch the arising and dissolution of thoughts. Find humor in that space of change. Don't block the senses. Don't indulge them either; don't control. As one meditation master put it "a confined mind causes havoc."[10] Don't label or identify anything. Allow yourself to be enraptured.

The word for meditation in Tibetan is *Gom*, which means *familiarity*. However, there is one big difference between meditation and art practice. "Meditation is being aware, not being involved."[11] When one meditates there is no need to follow a thought, no need to fabricate anything. When writing a poem, composing a song, or making a photograph we do follow the thought and channel that energy into form. Yet we need to let go too. As singer-songwriter Leonard Cohen put it: "You lose your grip, and then you slip into the masterpiece." Through *shamatha* meditation you can learn how to anchor your mind through the use of an external support.[12] Phenomena does not grab us, but we grasp at phenomena. We learn how to release our grasp. In terms of mindful photography, we learn how to *take* or, perhaps better said, *make* photographs without grasping, but rather more with an attitude of wonder and sharing what we have seen.

Sometimes people make the analogy that photographers are like hunters. In a competitive society that is often true, but its not the only choice. Once the chattering mind has settled, it becomes possible to participate with the place and space that you inhabit. When grasping is set free, the subject of your pictures may then offer itself to you. As a Buddhist priest once said, "If you have no desires, all things will be given to you."[13] Instead of always hunting and taking pictures you can gather and receive them. It is a question of attitude, and that will produce different

results. The mindful photographer is not interested in killing and trophies — not even capturing. We want to hold something in time. To do that we must learn to be quiet. If you want to observe what is happening in a forest, you must be very quiet and still. Just so, if you want to observe what is happening with your mind, you must be very still and quiet. We don't need to announce to everyone that the photographer has arrived. A certain degree of humility and capacity to disappear in the background is helpful.

Just as we need to create the conditions for inner calmness and focus, we also need to limit external distractions and be open to exploring ordinary everyday places. We have been conditioned to look for the centerfold, the sensational, and the famous. However, not everyone in the world looks like they just stepped out of *Playboy*, and unless you are one of the paparazzi, there are other concerns. Mindful photography means being aware of cliché pictorial conventions and challenging ourselves to push boundaries, principally through cultivating clear seeing. This means getting used to being out of our comfort zone, working with uncertainty, and constantly challenging one's assumptions. Ideally, if we are able to schedule a time to take pictures on a regular basis rather than just when we feel like it, that routine will help strengthen and establish our practice of photography. It will help us develop patience as well. There is a lot of waiting in photography, even digital photography, so get used to it.

The next step is to learn one's craft and translate that seeing into compelling photographs. We begin with the aspiration, an impulse, a wish to make something. Yet that alone will produce nothing. We must follow with applications that will fulfill the impulse. Craft is a path to develop, maintain, and strengthen our work. Having mastered a craft, it can't be taken away from us. We own it forever, or at least until the technology we have mastered disappears. Indeed, it is our responsibility to keep it going so long as the industry makes the products we need available.

Craftsmanship is sometimes wrongly praised as an end in itself, and other times it is dismissed, usually by artists who are bad at it. Without competence in our craft we cannot support whatever it is we want to show or evoke with our art. We invite frustration and a sense of failure. Clear seeing is important. The hands are important. Establishing a clear understanding of what photography is and why you want to do it is important. Practicing with a firm, kind, open, and straightforward heart is important. Both meditation and fine art photography require discipline and a firm heart. Indeed, we need to unite the head, the hands, and the heart in our practice.[14]

We must be careful to avoid the causes for the decline of our craft. These are discouragement, anxiety, and indulging in despair. Disrespecting one's teachers also ruins one's ability to learn. Also we need to remain humble without falsely deceiving ourselves and others about our meager accomplishments. It takes a long time to build up a practice, yet we must beware of habits. Still we must acknowledge that even the worst photographer now and then takes a good picture. Taking a good photograph does not always depend on years of study, practice and fine craftsmanship, but it may help. Making good photographs consistently does depend on all of those things. We should start with small goals and build up to bigger ones. Be courageous and take risks. Learn through your failures. Loss can open new possibilities. Somehow our practice of mindfulness must be nurturing and extend to keeping the joy of practicing our chosen art alive.

Mindfulness is supported physically through a good posture. If we hand-hold our cameras using a meditation or martial arts posture, with the knees slightly bent, shoulders pushed back at the same height, chin and arms tucked in, and the center of one's gravity about four finger widths below the naval, for example, then we will be much more stable. It is also helpful to gently hold one's breath at the moment the picture is taken. On the other hand, the flag-in-the-wind posture, which is to say twisted, unbalanced, and in motion, is not a stable support for hand held photography and makes mindfulness unlikely.[15] Being mindful of our posture makes us more flexible.

We cannot expect to become mindful photographers from one day to the next. Little by little we can learn to be in the present moment for five to twenty minutes, and as we stray from that awareness come back through introspection and return to our practice of photography. It is important to take breaks now and then to keep the mind fresh and vivid. Find the courage to face your own chaotic mind. Confidence comes from learning how to let it be. We don't need to manipulate or modify our perception, but mindful photographers do need to relax their projections. Your attention should be finely tuned like a guitar — not too tight, not too loose. Sometimes the mind will go wild and other times it will get dull. When you recognize that your thoughts have become scattered, lower your gaze, slow down, and loosen your concentration. When you enter a state of dullness, shake it up, raise your gaze, pick up your pace, and gently tighten your concentration. Whatever works. However, that's about as far as you should go in applying antidotes. Simply acknowledge that your awareness has strayed and return to your project of translating clear seeing into compelling photographs. Take your time. Don't fabricate a borrowed style. Open your eyes.

1 Sanskrit is an ancient Indian language.

2 The Sanskrit word for "introspection" is *sampajanna*.

3 The Sanskrit word for "bare attention" is *maniskara*.

4 For more on this subject see *A Mindful Balance*, Tricycle Magazine, Spring 2008.

5 For example, we can use mindfulness to support equanimity, joy, loving kindness, and compassion.

6 In Mahayana Buddhism the word "perfection" is a common translation of the Sanskrit term *paramita*, which means to go beyond the framework of dualistic self-clinging and transform whatever one does to benefit others.

7 It is often best to take pictures by yourself, to go out shooting alone rather than in a group. If the people you are with have a very different rhythm than you do, it will be harder to come into the space of awareness. Of course, there are always exceptions to this, such as the great photographer Walker Evans who almost never photographed without being in the company of others.

8 The Tibetan term for this is *je tob*.

9 These ideas are not original, but rather classic Buddhist ideas.

10 H.H. Shenphen Dawa Rinpoche

11 H.H. Shenphen Dawa Rinpoche

12 For example, fixing one's concentration on a stone, a stick, or any other object without labeling and examining it discursively.

13 Burton Watson, *The Rainbow World, Japan in Essays and Translations*, (Broken Moon Press, Seattle, 1990), 20.

14 See the writings of Johann Pestalozzi.

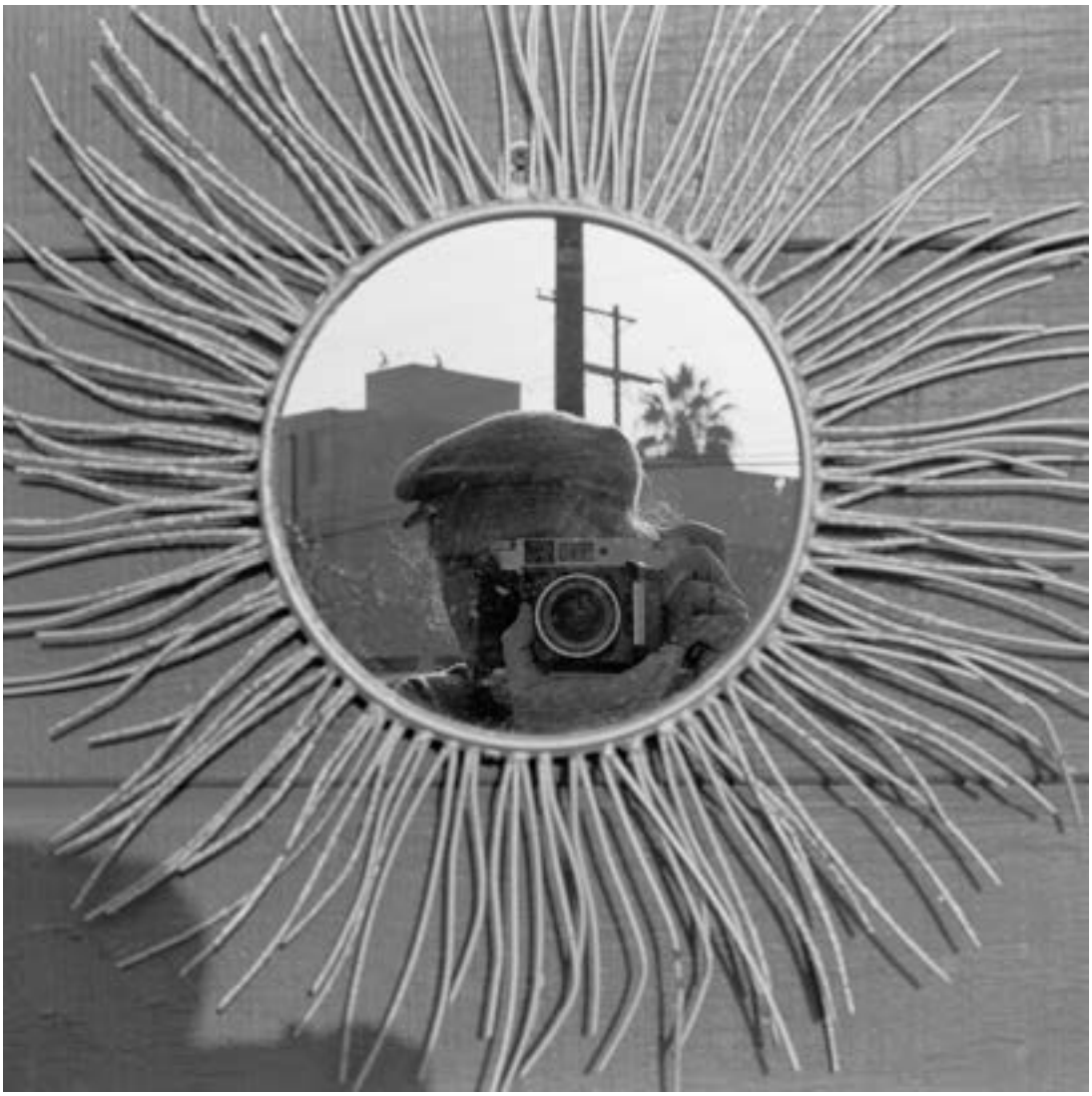
15 Through good posture the winds of our subtle bodies flow freely and we are able to relax in our base.

Thoughts On Tradition

Typically, we tend to either blindly embrace or reject tradition rather than trying to understand its place and importance in our lives. Artists tend to be people who wish to do new things, rather than always repeating themselves. They want to be free from pictorial convention, the time-consuming difficulty of technical mastery, and do something new nonetheless. By analogy, we want to get from Santa Monica to Long Beach in less than an hour without a vehicle. Others are utterly caught up with their cars' wax jobs, stereo systems, and climatized interiors coursing on smooth shocks, and have forgotten their starting point and destination. Tradition as a vehicle is thus misunderstood as an end in itself, and its significance as a means to transport an observer, as a conveyance of transaction, is lost from memory. People who cling to a particular tradition often feel they are more important than people from other traditions or no tradition, and are contentious and self-righteous about it. The trick is to embrace a tradition, or perhaps two or three traditions, without getting caught by attachment to a particular discipline as an end in itself. Guitarist and composer Robert Fripp put it nicely with the aphorism: "Discipline is a vehicle of joy." Insofar as every medium is a message, we must understand how to navigate the vehicle, know its limits, and how photography differs from other media without turning that into an academic formalist program. Otherwise, even if we eventually arrive at our destination we will have forgotten why we wanted to go there. Tradition is not an end in itself, but rather a vehicle of communication, learning, and joy.

Back in the days when the darkroom was the only choice, there were two predominate approaches that stood in opposition to each other. The first is best represented by Ansel Adams, who advocated learning all the technical possibilities available so that one could then pick and choose from the large menu of choices. The downside of this approach was that many photographers became so adept at their craft that they took it as an end in itself, rather than the support for whatever they were trying to convey or show through their art. Ansel Adams and his imitators were masters at what they did, but they didn't allow much room for change, and no room at all for chance to enter into the process. The second approach is best represented by Robert Heineicken, who founded the photography department at UCLA. He knew the craft of photography well enough to get the picture made to his satisfaction, and if he didn't know how to do something he learned how. He was not too proud to enlist other artists to help him in the darkroom, but at the end of the day he made the final decisions that led to the finished prints. In other words, he learned what he needed to learn as he went along. The downside of this model of working is that one might not be aware of an aesthetic possibility due to an ignorance of craft. Although certainly not true in the case of Heineicken, one could argue that many artists downplay craft out of fear and incompetency, and they speak of darkroom work or Photoshop work as mere mechanics that real artists ought not to be bothered with. Typically, they will then pay to have others make their prints for them. The problem with this approach is that they are delegating much of what constitutes the aesthetics of the image to someone else. They are basically separating the formative aesthetics of the image from what it means. The problem with this is that what a picture looks like is not separate from what it means. More on this later.

This *Operating Manual* endeavors to take a middle way between these two extreme approaches. We need to learn enough to know how to do what we want to do without getting caught by taking craft as an end in itself. At the same time, we need to know why we want to do it, even as we use our practice of mindful photography to reveal hidden intentions.



Part 2 — Navigating Choices

Cameras

Dorthea Lange once said "The camera is an instrument that teaches people to see without a camera." This is true. The practice of mindful photography is first and foremost about awareness and secondly to share with others what we have seen, but we need a camera for the latter. People who don't want to make technical decisions choose simple cameras like a cell phone. They abdicate their power to Apple and Samsung who have already made most of the decisions for them. A camera is essentially a dark box with a hole on one end that opens and closes. Usually there is a lens in front of the hole. A camera needs only a few basic features to rise above the choice-less majority of camera phones and PHD (push here dummy) cameras.[1] These features include focus, setting the ISO, setting the aperture, setting the shutter speed, and in the case of digital cameras choosing the format, such as RAW or JPEG. Each of these features will be examined at length. Most camera have additional features than the ones just mentioned, which are often bells and whistles that are not generally important and often confusing. In fact, the first thing the mindful photographer will do after purchasing a new camera is read through the camera manual so as to figure out how to turn off all the automatic features that get in the way of making straightforward meaningful choices.

On the most basic level, if you are using a 35mm film camera you need to be clear about how to load and unload it, otherwise you will be inviting frustration when the film develops clear or rips in the camera.

Loading Your Camera

Some cameras load automatically and some load manually. Cameras that load automatically will generally set the ISO (film speed) to the correct number and advance the film to the first exposure. Usually, one simply loads the cassette in the camera, pulls the leader to a red line, closes the camera, and hit the shutter release to set things in motion. Cameras that load manually save battery life, but require more mindfulness of the photographer. Firstly, set the camera to the correct ISO. Secondly, open the camera back. This is usually accomplished by lifting the film rewind knob, or otherwise lift or twist a latch on the side or bottom of the camera. Place the film cassette in the camera and pull out the leader of the film slightly, and insert the leader in the slit of the take-up spool on the opposite side of the camera. Turn the film rewind knob clockwise gently until it stops. Close the camera back. Push the camera shutter and advance the film and while so doing look at the film rewind knob to make sure that it has moved one full revolution. Take another shot and repeat. If the film rewind knob turns, your film is loaded correctly. If the film rewind knob fails to turn, this is an indication that the leader slipped from the take-up spool and did not load properly. Open the camera and begin again. Otherwise, your film will not advance and all of your exposures will overlap on one overexposed frame.

Unloading Your Camera

When automatic cameras reach the last frame of film they rewind. Manual cameras require that the photographer push a button on the bottom of the camera, or in some cases turn a knob on the top or front of the camera. Thereafter the photographer turns the film rewind knob clockwise, one revolution per picture taken. When the film has been rewound enough times you can feel and hear the leader of the film being released from the take-up spool. Continue to revolve the film rewind lever a few times and then open the camera and remove the film cassette.

Be careful not to forget to push the button on the bottom of the camera. Failure to do so will cause the film to rip. Forcing the film advance after the last shot of the roll has been taken may also rip the film. If you fear that your film may have ripped, open the camera in complete darkness to check.

Manual Focus

Focus is deciding what to render sharpest. Essentially this means turning a ring on the lens that adjusts either the arrangement of the elements within the lens, and/or the distance between the lens and the film plane or digital image sensor. Why would anyone want to take the time to focus manually? There are a few situations that work better when approached manually. For example, when one is trying to focus on something behind glass the auto focus will default to the surface of the glass resulting in an out of focus image. Photographing through a wire fence involves similar issues. Also, when doing extreme close-up photography with a *macro* lens auto focus is seldom an option. Portrait photography is often better served by carefully manually focusing on the eyes of the subject, which are the shiniest and most important feature. Landscapes are usually best focused slightly more than one-third into the distance to maximize depth of field, unless there is a particular subject within the landscape that is most important to prioritize. When making long exposures on a tripod, which is often the case in landscape photography, the *image stabilizer* can sometimes cause camera shake rendering the image somewhat blurred. Since this feature of a lens is only intended for hand held photography with auto focus, it should be turned off and the camera focused manually. Lastly, stop action photography is generally too quick to rely on auto focus, although high-end digital cameras have a feature called *continuous focus*[2] that compensates for the movement and senses the direction of the movement of the subject. One

might ask what it does when you have more than one subject. In this type of situation one would best employ a method called *zone focusing*, which is to estimate where the action will occur and focus manually ahead of time. Most medium and large format cameras will only focus manually.

Manual focus works well in older cameras and contemporary rangefinder cameras, but is somewhat primitive in digital cameras. There are several types of manual focus. The most unsophisticated kind of manual focus, found on most digital cameras as an alternative to auto focus, is simply a focusing screen made of matte plastic. One looks through the viewfinder of the camera and turns the focus ring until the image looks more or less sharp. Older cameras commonly manufactured before 1980, yet still in limited production today, offer a variety of more accurate options. The most common is a focusing screen made of fresnel matte glass with a circular microprism in the center. One simply looks through the viewfinder and turns the focus ring until the circle in the center becomes clear and stops shimmering. Another very accurate type of manual focus is the split-image prism. Like the microprism, it displays a circle that shows two images when out of focus, and only one image when in focus. Although the split-image prism is very accurate, it is difficult to use with moving subjects like water. The most excellent kind of manual focus is a combination of both the microprism and split image systems. Usually this is structured with a split-image prism in the middle circle, with another concentric circle microprism surrounding it that shimmers. The main drawback of these manual focus systems is that they take some time to place the focus deliberately. In other words, you decide what the sharpest plane of focus should be, rather than letting some automatic feature do this for you. This is usually not an issue for the mindful photographer. What's the rush anyway? A more legitimate issue is the fact that manual focus is sometimes very difficult in low light situations. Then it is helpful to have auto focus, or when one is in a hurry, or when one does not have a quality manual focus to rely on. It should be mentioned that rangefinder cameras do not have a problem with manual split-image focusing in low light because the photographer looks through a window of glass rather than through a lens.

For people who wear glasses it is advised to acquire a *diopter* with the same prescription as your glasses to place in front of the viewfinder. Indeed, many cameras, both film and digital, have this feature already built in. This way one will get a more accurate focus manually and not scratch one's glasses. The other option is to use auto focus.

Autofocus

Autofocus in a variety of systems is standard in most cameras today. Generally speaking, autofocus systems consist of a single sensor or an array of sensors that employ sound waves, infrared light, or phase and contrast detection to precisely measure the distance from the film plane / digital sensor to the subject. An array of sensors will measure several subjects and average them out, whereas a single sensor will just measure one point in the distance. If you want to use an autofocus manually, you can usually press a button that allows you to turn a wheel on the camera body that will allow you to select which single sensor in the array is active. You can then, for example, hold the shutter release half way down, place that point over the plane of focus you want to be sharp, and while continuing to press the shutter halfway down adjust the composition, pressing harder to release the shutter when you are ready to take the shot. Most lenses with an autofocus feature have a switch on the left side of the lens that allows the photographer to switch back and forth from manual to auto.

1 This abbreviation is borrowed from *Like a Razor to a Razor Blade Company,* an article by Jim Pomeroy from *Afterimage*, Visual Studies Workshop, Rochester, NY Vol.11, No. 9, April 1984.

2 Canon cameras call this *AI servo*.

Sensitivity and Resolution — ISO

There are a number of terms that refer to film sensitivity. These are ASA, which is an abbreviation for *American Standards Association*, DIN, the German system that abbreviates *Deutsches Instiut für Normung*, and ISO, an abbreviation of *International Standards Organization*. In the early to mid-1980's these terms were unified exclusively as ISO, today's standard system of measuring film or digital sensor sensitivity to light. That being the case older cameras may use the older systems, so it important to understand that ASA and ISO utilize the same numbers, however, DIN is different. For example: DIN 21 = ASA /ISO 100. For all systems, the higher the number, the more sensitive the film or digital sensor is to light, and the lower the number, the less sensitive. This is important because it allows the mindful photographer control over resolution, meaning the fineness or coarseness of grain for film, and the degree of pixilation, also known as image noise, for digital photography. ISO is also a factor in exposure, determining the size of the lens opening (aperture), and how long it stays open (shutter speed). Consequently, a low ISO number makes it easier to deliberately employ shallow depth of field because the photographer will be able to open the lens wider. A low ISO will also cause risk of camera blur when hand holding the camera in a low light situation. Conversely, a high ISO will make it easier to use a small aperture when deep depth of field is desired. It will also reduce the likelihood of camera blur when hand holding the camera, and make it easier for stop action applications, such as capturing a dancer in mid twirl. Some cameras require the ISO to be set manually, whereas others will default to automatic unless you shut off that feature. If you do not monitor your ISO, you will not be aware what degree of image resolution will result. This is not advisable.

Controlling Exposure — Setting the Aperture and Shutter Speed

Both film and digital sensors are sensitive to light. The photographer needs to let just the right amount of light into the camera for a proper exposure. This can be done either manually or automatically. Camera corporations have invested a lot of money into coming up with systems that will automatically determine exposure. They will never succeed in every case for the simple reason that light meters don't know what is in front of the camera. They assume the world is middle gray. When the subject matter visible within the entire frame of the camera deviates significantly from middle gray, the picture will be exposed incorrectly. The mindful photographer is aware of what is in front of their camera, and their exposure options.

If the film or digital sensor receives too much light the result will be overexposure. This will cause the picture to appear somewhat light and washed-out, with little or no detail in the highlights. If the film or digital sensor receives too little light the result will be underexposure. This will cause a muddy looking somewhat dark picture, with little or no detail in the shadows. Later in this book we will examine advanced exposure situations, and how different kinds of film and digital capture differentiate in their nuanced approaches. However, for now suffice it to say that exposure is basically how to control the amount of light that enters the camera, and there are only two factors that do this. The first is the aperture, which is a fancy name for a hole. The second factor is the shutter speed, which is how long the hole stays open.[1]

Aperture

For a pinhole camera the aperture is literally the size of a pin with no lens involved. Most cameras do have a lens. The hole inside the lens is formed by a mechanism called the *diaphragm,* and is generally composed of a number of overlapping leaves of extremely thin metal that form a geometric hole in the middle where they meet. If the diaphragm is an aggregate of five leaves of metal, the hole will have the shape of a pentagon. If it is comprised of six leaves, it will have the form of a hexagon, and so forth. When the hole is smaller it lets in less light, and when the aperture is bigger it lets in more light. Small apertures focus the light more fully over the entire image area, a quality we call deep depth of field. Large, especially wide-open apertures focus the light only at a specific distance, thereby rendering only a very short plane of focus sharply. This quality is known as shallow depth of field. There are other factors that also influence depth of field. More on this later. The size of the hole is represented by a standardized number called an *f stop*. For example:

1.4 2.0 2.8 4.0 5.6 8.0 11 16 22 32 45 64

F stop 1.4 lets twice the amount of light into the camera as f.2.0, which lets in twice the amount of light as f. 2.8, which lets in twice the amount of light as f. 4.0, and so on down the line. In other words, each standard f. stop lets in half or double the amount of light as the closest aperture. For example: f. 8 lets in half the amount of light as f. 5.6 and twice the amount of light as f. 11. The general rule of thumb to help remember the relationship between the f. stop number and the size of the aperture is: the bigger the number, the smaller the hole. Most cameras have intermediate numbers that allow you to get in-between, however, since these numbers don't have this neat relationship of halving or doubling the amount of light that enters the camera, they can be confusing and difficult to use manually.

Shutter Speed

The shutter speed is the amount of time the diaphragm stays open. These fractions of a second are standardized as follows:

1 (1 second)
2 (1/2 of a second)
4 (1/4 of a second)
8 (1/8th of a second)
15 (1/15th of a second)
30 (1/30th of a second)
60 (1/60th of a second)
125 (1/125th of a second)
250 (1/250th of a second)
500 (1/500th of a second)
1000 (1/1000th of a second)

Digital cameras often have shutter speeds that are even faster, such as 2000 and 4000. Here again, as with the standardized f. stop apertures we have a halving of the amount of light that enters the camera from top to bottom. One second lets in twice the amount of light as 1/2 a second, which in turn lets in twice the amount of light as 1/4th of a second. The shutter speed settings are represented in fractions of a second, so it is important not to confuse 4 (1/4th of a second) with 4 seconds. Fast shutter speeds like 500 are recommended when it is necessary to stop action and avoid camera blur. Slow shutter speeds such as 4 are needed when there is very little light and we use our camera on a tripod. Slow shutter speeds also allow the mindful photographer to deliberately blur moving subjects while the non-moving subjects visible within the camera frame are rendered sharply. Furthermore, slow shutter speeds allow the photographer to use extremely small apertures that increase the depth of field and overall sharpness of the image.

Coordinating Apertures and Shutter Speeds

To repeat, both apertures and f.stops are capable of doubling and halving the amount of light entering the camera. This is fortunate because it makes it easy to make choices and set those on our camera manually, or to better understand what the camera is doing when it is set to one of the automatic exposure features. Basically, it's like filling up the bathtub with water, except we are filling up the camera with light instead. When you open the faucet that fills up the tub all the way, the water comes out quickly and fills up the tub very fast. Conversely, if you only slightly tweak the knob controlling the aperture of the faucet, the water will come out slowly and it will take a long time to fill up the tub. A small aperture requires a slower shutter speed, whereas a wide-open aperture necessitates a fast shutter speed. How do you know which apertures and shutter speeds to use? That's what your light meter is for. It measures the quantity of light available in any given situation. The numbers your light meter recommends for taking pictures indoors, in the shade, or in the bright sun will be different. For example: in the bright sun, when shooting with an ISO of 125, your meter might recommend an exposure of *125 at f. 16* or thereabouts. This is known as the *sunny 16 rule*: 1/ISO @ f. 16 in bright sunlight. Here are some equivalent exposures:

4000 @ f.2.0
2000 @ f.4.0

1000 @ f.5.6
500 @ f.8
250 @ f.11
125 @ f.16
60 @ f.22
30 @ f.32

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15 @ f.45
8 @ f.64

Please note that a shutter speed of lower than 30 on a typical 35mm film camera or DSLR (digital single-lens reflex) will require a tripod. When shooting with telephoto lenses or with medium format cameras you can only hand hold at best 1/60th of a second, and perhaps only 1/125th. Most small format cameras only stop down to f. 16 or f. 22, thereby limiting the choices.

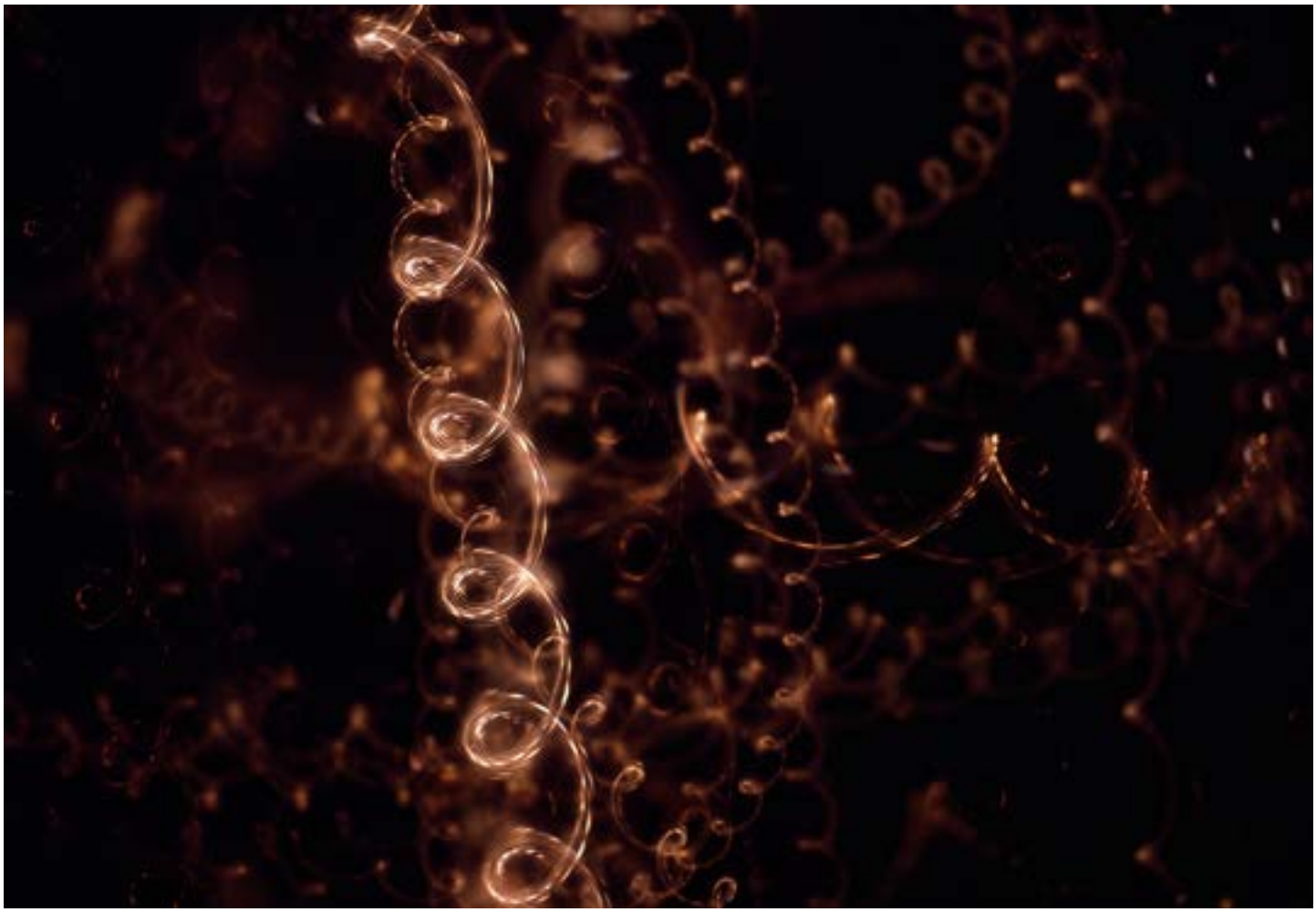
All of the choices listed above will let the same amount of light into the camera. How do you know which combination to pick? Well, first of all if you set the camera on automatic it will pick for you, but it will probably pick the combination that will the least risky and render the least interesting picture. Why, because it doesn't know what's in front of your camera and what quality of depth of field or selective sharpness you want the picture to have. This is where mindfulness comes in. You must be aware of your choices within the present moment and the consequences or *effects* of those choices in the near future — the new present moment. Let's look at the extremes for brightly lit lighting conditions with an ISO of 125. We could use 8 at f.64, if we have a tripod and a lens that allows us to stop down to such a small aperture, such as the lenses used for large format cameras. Most likely, however, we would have to use 60 @ f.22 for a hand held small format camera. This exposure, 60 @ f. 22 will have excellent overall depth of field, i.e. everything rendered sharply due to the small aperture, but objects moving very quickly visible within the viewfinder, like a speeding race car would most probably be slightly blurred. A slight blur is something to avoid because it generally reads as an unintended accident, whereas a significantly blurred object reads as deliberate and intentional. The second option, 1000 @ f.5.6 would be a good choice if we wanted to stop the action. We would have to zone focus very carefully because f. 5.6 would give us a narrower range of acceptable focus than f. 22. In other words, it would give us shallower depth of field, meaning our subject would be sharp, but the background and foreground might not be. This is often desirable because it tells the viewer what the photographer thinks the viewer should look at. In this brightly lit situation, for an even shallower depth of field a digital camera with a shutter speed of 4000 would allow the lens to be opened to f. 2, which is significantly shallower in terms of the acceptable sharpness of what would be rendered more or less sharply within the picture. If one does the math correctly all these choices listed above let in the same amount of light, but the pictures will look very differently. Why would you want to leave that choice up to a corporation? The only honest answer is that you are either bad at math or too lazy to be bothered, which is probably not the case because you would never have read this far if that were true. It's not rocket science. If you open the faucet just a little the bathtub fills slowly. Open just a little = small aperture / big f. stop number. Fills slowly = slow shutter speed. Anyone who has ever filled the tub can do this. Just replace bathtub with camera, faucet with lens diaphragm and the time it takes to fill the tub with shutter speed. No fancy math is required. It's all visible on the meter or within the camera. You just need to understand what the numbers mean. Overcome fear of numbers.

Let's review this again with a different set of numbers, this time, say for a more dimly lit situation. If you were indoors, perhaps the light meter might give an exposure reading of something like 30 @ f. 1.4. Here are the equivalent exposures, i.e. the exposure combinations that will let in exactly the same amount of light. Each choice down the row will cause the picture to have an increasingly deeper depth of field.

30 @ f. 1.4
15 @ f. 2.0
8 @ f. 2.8
4 @ f. 4.0
2 @ f. 5.6
1 @ f. 8.0

Most cameras have another setting designated "**B**" for time exposures longer than one second. Using

B for two seconds you would have the additional option of f. 11, or using **B** for 4 seconds at f.16, and so on.[1] As the aperture gets smaller the overall sharpness of the picture increases, however, at the same time the likelihood of blur increases doubly with each new combination. Sharpness and blur are not the same thing, and they are often confused. Lack of sharpness comes from poor focus and not enough depth of field, whereas blur comes from camera and/or subject movement with a slow shutter speed. Lack of focus and blur look similar, however, the discerning mindful photographer can tell the difference. It's a simple choice really. The mindful photographer just needs to know which is more important in any given situation, overall sharpness (deep depth of field) or the possibility of blur. The photographer can only use the options with slow shutter speeds when they have a tripod and the willingness to use it. It is also necessary to use a device called a cable release or a remote control to release the shutter without the movement of the finger causing the camera to move and blur the whole image. Using a self-timer is also an option.



Shutter Speed Synopsis

Stop Action

To freeze motion, it is necessary to use a fast shutter speed such as 1/500th or faster. A fast shutter speed lets in very little light. Therefore, as you increase the shutter speed it is necessary to correspondingly open the aperture (smaller f.stop number).

Deliberate Blur

Blur is sometimes confused with the look of an out-of-focus image. In order to intentionally blur your photograph, use a slow shutter speed such as 1/4 of a second. This lets in a lot of light. Therefore, as you slow down the shutter speed it is necessary to correspondingly close the aperture (higher f.stop number).

A slow shutter speed shot with a camera on a sturdy tripod will render an image where everything moving is blurred, and everything still is sharp.

A slow shutter speed shot without a hand-held camera will cause everything to blur.

Usually a significant blur is preferable to a slight blur, which reads as non-intentional.

Exposure Metering Systems

Before we can get into the details about the different modes of exposure available on various cameras we need to get a handle on how the meter works and what it sees. It is important to read your camera manual so you are aware what part of the frame is being measured as you look through the viewfinder. Here are some possibilities:

Full-frame Average Metering

Everything visible in the frame is being measured equally and being averaged out.

Center Weighted Metering

This system measures a rectangular area concentrated within the center of the viewfinder. It could be as narrow as 15% or as wide as 80%, but usually somewhere in-between. Sometimes it is called *selective metering* when the center weighting is very narrow. This area will probably be visible in the frame, perhaps as a gray rectangle. Center weighted metering is the most common type of system. It has the advantage of being less sensitive to spectral highlights, very bright points of light such as reflections off of metal and glass that might trick your meter into thinking the scene's overall brightness is brighter than it really is. The mindful photographer will be careful to make sure that the area he or she sees through the viewfinder is on the whole neither too light or too dark.

Spot Metering

A very narrow circle of light in the center of the frame, usually 1 - 5% of the viewfinder area is measured and averaged out. This system of metering allows you to measure a very specific area without needing to get close to it, such as photographing the stage from the point of view of the audience, for example. It can be quite usefully in many situations, such as when the subject is backlit. It also allows the advanced photographer to measure the shadows, mid-tones and highlights separately to make sure the film or digital sensor has the capacity or *latitude* to record the maximum amount of detail in any given scene. Many cameras have a spot meter function visible through the viewfinder, but often spot metering is accomplished by using hand held light meters which are separate from the camera.

Multi-Zone Metering

In this type of system, also know as *matrix* metering and other names, the viewfinder might be divided up into five sections, or even a honeycomb of a dozen or more sections that are simultaneously measured and averaged out. This can be very accurate in many situations, especially with respect to avoiding spectral highlights from tricking the meter. However, it is not failsafe because no matter how sophisticated the meter is, it does not know what is in front of the camera.

Incident Metering

This type of system measures the amount of light coming from the light source rather than the quantity of light being reflected by the subjects. It can only be done with a specialized hand held light meter. Cinematographers and studio photographers rely heavily on this method. It allows the photographer to measure the main light source and the fill light source separately and based on that information quantify the *contrast* of the subject as a *light ratio*. In other words, to determine how gray or harsh the dynamic range of the image will be.

Many cameras have the ability to switch back and forth from these choices. The mindful photographer is conscious of their choices and why they have made them.

Exposure Metering Modes

Many cameras have only one choice insofar as modes are concerned. Cameras are usually either fully manual or fully automatic, however, many cameras do offer a variety of modes to choose from that are useful in specific situations. The mindful photographer is aware of these choices or lack of them and adjusts accordingly.

Manual Mode

All good cameras can be operated manually. This means you set both the aperture and shutter speed and find the right balance. How exactly to do this will vary from camera to camera. Usually, there is a needle visible on the right or left edge of the viewfinder that goes up and down depending on how bright the scene in front of the camera is. You would then move the aperture ring on the lens or the shutter speed dial, or some variation of these two things to bring the needle to a place of balance in the middle, between a plus and minus mark. Other cameras employ a system with red lights on the top and bottom indicating over and underexposure, respectively, and a green light in the middle indicating one has found the correct balance. Still other metering systems will work in such a way that the photographer sets the aperture, holds the shutter release button half way down, and then a light appears with the corresponding shutter speed. Other cameras do it the opposite way, meaning the photographer sets the shutter speed, pushes the shutter release half way down and then the camera indicates what aperture to set the lens to. A manual camera will utilize only one of these systems, not a combination of them. Most manual systems are straightforward and can be easily understood in a few minutes, especially if one has a teacher who is familiar with the camera to help guide you. Ironically, the more expensive, automated and complicated a camera is, the greater the likelihood it will have a more complex approach to taking pictures manually. The reason why the mindful photographer often chooses to work in manual mode is that then they can be in control of both the depth of field, i.e. overall or selective sharpness, and also stop action or deliberately blur the image. Additionally, manual mode makes it very easy to intentionally under and overexpose when necessary.

Aperture priority automatic — Emphasizing Depth of Field

Most camera manufacturers designate this mode with the letter *A* somewhere on a dial or display. Canon cameras, however, call this *AV*, meaning *aperture value*. Basically, when your camera is set to aperture priority it means you pick the aperture and your camera will automatically select the shutter speed in any given lighting situation. Usually this is accomplished by setting the aperture ring on the lens, or a display somewhere on the top or back of the camera, to a specific f. stop aperture. This allows the mindful photographer to decide whether they want shallow, medium or deep depth of field. As mentioned earlier, the higher the f. stop number, the smaller the aperture will be, and the greater the overall sharpness.

Shutter priority automatic — Emphasizing Deliberate Blur and Stop Action

This mode is generally designated by the symbol *S*, however, Canon cameras call it *TV*, meaning *time value*. In this mode the photographer sets the shutter speed and the camera will automatically adjust to the appropriate aperture to match, depending on how much light is available and the ISO (film or digital sensor speed / sensitivity). This is an especially useful mode when freezing action with a camera. Usually these situations happen quickly and one doesn't have the time to work manually. It can also be useful for using very slow shutter speeds when a deliberate blur is desired. For both aperture and shutter priority automatic modes one must be mindful that there is neither too much, nor too little light available to work with the settings you have chosen.

All cameras that have these options will have some way of indicating when this is the case. Usually it is a blinking light. If that happens, the photographer must find a different starting point. For example, if you chose a starting shutter speed of 4 (1/4th of a second) in bright sunlight with an ISO of 400, there is no way that the lens would be capable of closing small enough to accommodate that much light. Therefore, you would need to start with a faster shutter speed to avoid overexposure.

Fully Automatic

Fully automatic mode is the opposite of manual. When using this mode, you lose the ability the set the aperture, shutter speed, and ISO.

Program Mode

Program is the same as fully automatic mode, except that one can still set the ISO manually. Fully-automatic or program mode, or *P*, as it is designated, are the preferred modes for taking snapshots when one just doesn't want to be involved or have the time to make any technical decisions. This is how cell phones generally operate and most simple low quality cameras. However, many expensive cameras actually use *P* as the default mode, assuming that most photographers would prefer not to be bothered with issues like depth of field, stopping and blurring action, etc. P has its place. It takes a degree of humility for a photographer who holds a ton of technical knowledge in the palm of their hand to put it down and just get to to task at hand without fuss. The best case scenario is if things like balancing shutter speed and aperture become so second nature that they no longer get it the way of a contemplative approach to picture making.

1 Please note these calculations do not take into consideration reciprocity factor, which is only relevant for very long exposures using most films.

Exposure Considerations

Intermediate Exposure

Many cameras have a dial or setting that allows for + /- exposure compensation. This is useful when the subject matter visible within the viewfinder of the camera does not average out to middle gray. The light meter in your camera can only measure the brightness of what is being reflected back to it. A long time ago, it was decided that light meters should be balanced to neutral gray precisely half way between white and black. In practice, this means that If you are photographing a gray elephant in front of a gray wall approximately this same density as neutral gray, your light reading should be pretty close to accurate. However, if you are aiming your camera at a white dove in the snow, your meter will make it look like a gray pigeon in gray snow. In other words, the meter doesn't know what is in front of it, so it will make it look gray whether it is gray or not. Likewise, if you are pointing your camera at a black cat curled up in a black tire in a dark alley, you will end up with a gray cat in a gray tire in a gray alley. Your light meter cannot think— that's the bad news. The good news is that you can think, and you can compensate. So what do you do? In the case of the white dove in the snow, you should move the exposure compensation dial in the direction of plus (+), which will let more light in, resulting in white rather than gray. However, for the black cat in the tire, move in the direction of minus (-) which will let in less light, resulting in a black rather than a gray cat. Usually the dial permits the mindful photographer to add or subtract in 1/3 stop increments. It might be necessary to add or subtract up to 2 stops in extreme situations. This is something the photographer will learn with practice and experience. It seems counter-intuitive because we think, "Oh, it's so bright and light, I better stop down to cut some of the light," but in actual fact the opposite is true. We need to manually let more light in because the automatic light meter has over-compensated.

In the meantime, there is another method one can undertake to get reliable results. This involves the use of a *gray card*. These cards can be purchased at any good camera store. They are usually 8 x 10 inches in size, although if one has a spot meter they can be cut down to 4 x 5 inches, a more convenient size to carry around. Place the card in front of the camera so that the same amount of light is hitting the card as your subject. In other words, be careful that the card is tilted at just the appropriate angle. Also, make sure that your shadow is not falling on the card, and that you are only measuring the gray of the card and not the background. Simply make a note of that exposure reading and use those settings instead of the settings your light meter gives you without the gray card. If you don't want to carry around a gray card, then take the time to measure the difference between the palm of your hand and a gray card. Everyone has a different density of skin on the light to dark scale. Dark skinned individuals often have a gray card literally at their fingertips. If your skin is 1 stop brighter than a gray card, you will have a very handy tool that is always available. Simply measure the hand and stop down one stop. For example, if your skin meters at f. 11, and you want the result of a gray card, simply open to f. 8. Both the gray card and hand method will guarantee that the mid-tones of your image will be accurately exposed. However, not all scenes have the same contrast range, so this method will not guarantee that you will hold all of the shadow and highlight detail. To do this you must rely on more advanced exposure techniques.

Sometimes the fine art photographer wants to make a picture that is deliberately too light or too dark for expressive reasons. In these cases, the light meter reading is only a starting point. For example, the photographer Roy DeCarava often made the street scenes and portraits he took in Harlem look darker than they really were. Similarly, the Japanese photographer Rinko Kawauchi and her imitators often overexpose to give the picture a sense of lightness.

When the mindful photographer wants the scene before their camera to appear darker or lighter than it really is, they will let less or more light into the camera, respectively. Through the techniques mentioned above they will do this without stress or strain.

Advanced Exposure

The seasoned photographer is aware that there are different strategies for exposure depending on whether you are shooting black and white sheet film, black and white roll film, color negative film, color reversal film and digital capture. Each of these choices has a different *dynamic range* or latitude, meaning the ability to hold detail throughout the range of values from dark to *light*.

Black and White Film

Out of all these options black and white sheet film has by far the most latitude, which is to say, it offers the most detail in the shadows and highlights if the exposure and subsequent film development is managed intelligently. This is partly due to the fact that each sheet of film can be treated individually, although it also applies to roll film when all the exposures on the roll were made in very similar lighting and subject matter conditions. Basically, the photographer needs to expose for the shadows and develop for the highlights. There are both systematic and intuitive approaches to this endeavor. In fact, there are so many different versions of what was originally called the "zone system"[1] invented by Ansel Adams and Fred Archer around 1939-40, that it can be quite confusing. The zone system will not be explained here[2], but rather an intuitive approach based on understanding two facts. Firstly, exposure determines the density of the negative, and secondly, film development determines the contrast of the negative. The photographer needs to have access to a spot meter so that they can measure a gray card and both the shadow and highlight detail. For a scene with normal contrast the shadow detail should be two stops darker than neutral gray, and the highlight detail should be two stops lighter. In Southern California this is usually not the case at high noon on a bright and sunny day. Rather, there will be a greater than two stop difference between neutral gray and full shadow detail, and full highlight detail. The opposite is true under the cottage cheese skies of Seattle, where there will be less contrast than normal. In other words, there will be less than two stops difference between neutral gray and full shadow and highlight detail. In terms of actual f. stops, a normal, low and high contrast situation would look something like this:

(Please note that if you were to change the ISO or move into a dimmer or brighter light all of these numbers would change.)

Normal contrast light and / or subject matter

Gray Card Reading	125th sec. @ f. 11
Full Shadow Reading	125th sec. @ f. 5.6
Full Highlight Reading	125th sec. @ f. 22

Note: There is a two stop difference between shadows and neutral gray, and a four stop difference between shadows and highlights.

Low contrast light and / or low contrast subject matter

Gray Card Reading	125th sec. @ f. 11
Full Shadow Reading	125th sec. @ f. 5.6.5
Full Highlight Reading	125th sec. @ f. 16.5

Note: There is a 1.5 stop difference between shadows and neutral gray, and a three stop difference between shadows and highlights.

High contrast light and / or high contrast subject matter

Gray Card Reading	125th sec. @ f. 11
Full Shadow Reading	125th sec. @ f. 4.5
Full Highlight Reading	125th sec. @ 22.5

Note: There is a 2.5 stop difference between the shadows and neutral gray, and a five stop difference between the shadows and highlights.

So, confronted with all these numbers, what should you do? Let's look at each of these three cases separately.

For normal, use the gray card exposure and follow the directions on the chart[3] for film development without changing anything. In other words, get the dilution precisely correct; develop at 68 F / 20C (degrees in Fahrenheit / degrees in Celsius); agitate correctly and consistently; and lastly follow the recommended developing time.

For a low contrast situation, measure the shadow detail and close down exactly two stops. For example, if your shadow detail reads at f. 4, then expose at f. 8. This will ensure that you will hold detail in the shadows. For film development you must follow the same advice as for normal with regard to the first three variables, which are dilution, temperature and agitation. Make sure these are unfailingly consistent. However, you must increase the development time. This is known as push processing, or *pushing*.[4] Just how much you increase depends on just how gray your subject matter was, and how cloudy and gray the weather. There is a simple rule of thumb to gauge this without undertaking endless tests. Simply take note of which filter you use when printing the negative you developed. If you are generally printing on a #2 filter, your development time has been correct. If you are printing on less than a #2 filter (i.e. #00 - #1.5) you have developed the film too long, so next time you should reduce the time accordingly. If you are printing with a filter higher in number than #2 (#2.5 - #5), you should increase your development time for the next batch of negatives you develop.

For a high contrast situation, do the same as you did for the low contrast situation, but this time reduce the film developing time. Dilution, temperature, agitation and time all affect contrast, so we want to get it down to one variable — development time. Keep all the other variables consistent. To do otherwise is to court confusion. So, measure the shadow detail and stop down two stops, thereby insuring that you will hold the detail. Then reduce the development time. The term for this is *pulling* the film.[5]

As stated earlier, for black and white film, exposure controls the density of the negative and film development controls the contrast. How does this work? Basically, you want to give your film the minimum amount of exposure necessary to make sure that you hold the detail in the shadows. This will be the case if you take a light meter reading of the full shadow detail and stop down two f. stops. If you give the film more exposure than that, it will only increase the size of the grain and likely cause your highlights to get blocked. As for film development, you want to leave the developer in contact with the film for however long it takes for the highlight detail to fully mature, but no longer. In the beginning of the film development process the shadows, mid-tones and highlights are all developing at an equal rate. However, after a few minutes the shadows will stop developing because not enough light hit that area of the film. The mid-tones and highlights will continue to develop. After another couple minutes the mid-tones will stop developing, but the highlights will continue to get denser the longer you leave the developer in the film developing tank, thereby increasing the contrast. Pulling the film will cut the highlights before they get too dense, and pushing will increase the contrast by making the highlights denser. Exposure will affect the overall density, but film development will mostly affect the density of the highlights. If you don't leave the film in the developer long enough you will likely end up printing with a filter higher than #2, and if you leave it in too long you will need to use a filter lower than #2 and also do a lot of dodging and burning. At the end of the day understanding how film exposure and film development work give you not only much richer photographs in terms of the detail and gradation, but also save a lot of time and money when making the prints in the darkroom.

So, in a nutshell, for black and white film, in a low contrast situation slightly underexpose and push the film. In a high contrast situation, slightly overexpose and pull the film. In a normal situation, correctly expose and develop the film.

Color Negative Film (Process C-41)

There were once a great many color negative films available on the market. Most of them have been discontinued. Although chromogenic prints made in the traditional color darkroom can be quite beautiful, color negative film does not have the same exposure and development flexibility as black and white film. Also, prints made from color negatives were highly unstable until the mid-1990's. Artist's who learned photography in the decade that followed enjoyed a Renaissance of color darkroom printing. The photographer of the turn of the century sought to make big, fat orange negatives.[1] Many photographers got in the habit of overexposing a bit because color negative film holds a lot of detail even when the negatives are somewhat dense. It does not print well if it is underexposed, resulting in *muddy* looking prints. However, this kind of film does hold detail in the highlights well, even when it is overexposed. It is often possible to bring out that detail through *burning* in the darkroom.

Beware of black and white film that was not purchased at a real camera store. In most cases it is color negative film in disguise, requiring C-41 processing.

Color Reversal Film (Process E-6)

Color reversal film in small format is known by the common name of the *slide*. It is generally sharper and finer grain than color negative film. The chemicals used for processing are known as E-6 for Ektachrome type films. The earliest commercially available color reversal film was the legendary Kodachrome,[2] which was in production from 1935-2009. It was a gorgeous slow film (ISO 25 & 64) requiring special K-14 processing, done exclusively by Kodak. The processing was pre-paid and sent through the mail. There are a few very fine color reversal films still onthe marketplace made by Fuji. Although these films are rarely printed in the darkroom nowadays, they scan well, indeed much better than color negative film. Therefore, color reversal film is still a favorite of many serious photographer intent on only the highest quality results whatever the cost and hassle.[3] The exposure of these films require the opposite concern of color negative film. One must be very careful not to overexpose. A general rule of thumb for slides, is that when in doubt choose the exposure that lets less light into the camera. Many people avoided these films, not because of their cost or lack of quality, but because exposure with them left little room for error.

1 This is a reference to both the color of the processed color negative, and to the fact that large format photography made a big comeback, particularly in grad school programs, when big, color prints came into fashion.

2 This film was popularized in 1973 by Paul Simon in his #2 on the charts hit *Kodachrome*, with the lyrics "...gives you those nice bright colors, makes you think all the world's a sunny day..." and "Mama don't take my Kodachrome away."

3 Good scanning is a very time-consuming process. Post-production can include hours of dust retouching for a single shot.

Digital Capture

Exposure for color reversal film and digital capture is basically the same in that overexposure causes you to essentially lose the shot. Fortunately, digital cameras provide immediate feedback. Not only can you see a small image on the back of the camera, but if the image was made on a quality digital camera you can also check the histogram, a graphic display of the exposure. Sometimes this is black and white, and other times red, green, and blue, often with the ability to go back and forth between these two options. It looks somewhat like the silhouette of a mountain range. The left side of the graphic display represents the shadows. The right side represents the highlights. The middle represents the mid-tones. The most important thing to check when inspecting the histogram is that there is a little room to the right of the the graphic display. If there isn't, it means that part of the picture will have no detail. It will be solid white. The Adobe Camera Raw exposure compensation slider will help you repair this to a minor extent, but no Photoshop wizardry can bring back all the lost detail, short of cloning detail from another area of the image. The mindful photographer will slow down, take a look, and if necessary stop down a bit, often using the +/- compensation dial to let less light in. It is uncanny that people spend so much money on a camera with the ability to display a histogram, but they never learn how to analyze it. It only takes a moment to check and make the changes for a far superior exposure. As already mentioned, if the photographer shoots in RAW mode, there is some capacity to adjust the exposure after the fact. This is a feature that no other form of image capture possesses. Perhaps the biggest danger of working digitally is the attitude that one can always fix it later. It is highly preferable to get it right when you take the picture so that you don't have to fix it, but rather use your software skills to make subtle adjustments.

Some of the new medium format digital cameras show much promise in providing an expanding dynamic range of digital capture. This will probably be the next revolution to challenge the continuing relevance of film. For now, however, these camera systems are hopelessly overpriced and out of the reach of most photographers.

JPEG vs. RAW

There are many digital formats, but there are really only two worthwhile choices at the time of capture. These are the highest quality JPEG available on your camera or RAW. Later on, in Photoshop or Lightroom, one can save the file as a PSD or TIFF file, and this is recommended, but not from the get go. It is indeed a mystery that literally all expensive digital cameras give you so many format options when it comes to different quality JPEG. If you want low quality use a cell phone or a cheap camera that only gives you a low quality option. Most serious digital cameras now give you the choice to shoot both JPEG and RAW simultaneously. What is actually happening, however, is that the camera shoots the image in RAW and then instantaneously duplicates it in compressed form. This feature is useful when you are going back and forth between shooting snapshots and more serious photographs, and you don't want to be constantly bothered to go to the menu to change modes. In actual fact, all digital cameras shoot RAW, even cellphones, however, only good digital cameras leave it in RAW without automatically compressing it. You have to pay to have the choice. So what is the big difference between JPEG and RAW. Basically, RAW means that the file is uncooked. It's sort of like undeveloped film. During the film development process, you make certain decisions that affect the outcome of the negative's contrast. Similarly, when you process a RAW file you do not open it up immediately in Photoshop, but rather use Camera RAW software which displays a dialog box offering dozens of features that can profoundly alter how your image looks. You cook it, so to speak. A lot of people overcook their RAW files. This will be addressed at greater length.

So why would anyone want to shoot in JPEG mode if RAW offers so many more options? Firstly, most people don't want options. They don't want to think. They want to keep it simple. This is particularly the case with snapshot photography. If the snapshot is your goal there is no reason to slow down the process interminably. JPEG is also recommended when the display goal is the internet. JPEG compression adds a bit of contrast and sharpness to make the picture "snappy". Also, the small size of a JPEG makes it easier to upload or send a file via e-mail. It also takes much less storage space; an issue that is becoming less relevant as options in these quarters expand. One thing to be careful about, however, if you are shooting in JPEG and you end up making a lot of changes to your file, be sure to save it as a PSD or TIFF file before making the changes. Every time you make a change to a JPEG file, even removing the red eye or flipping from horizontal to vertical, it will degrade the file permanently. RAW, on the other hand, can sustain infinite changes with no file degeneration.

Shooting JPEG can be likened to blurting out what's on your mind without thinking through your words beforehand. Shooting RAW is like considering those words before they enter the ears of another. Even though it is called "RAW," this format is actually more refined. RAW goes by many names. A Nikon RAW file will end with the suffix .NEF, whereas Canon will end with CRW, and Fuji will be RAF. These are all proprietary RAW files, meaning they are specifically created by the camera company with special features such as imitating the way a certain kind of Fuji film looks, for example. There is only one non-proprietary RAW script and it is called DNG, which stands for *digital negative*. Any RAW file can be turned into a DNG file. Some people claim that there is a greater likelihood that in the distant future DNG files will be supported and proprietary forms may not, however, there is no evidence to support this.

The reader may recall that all this information about so many technical matters arose within the context of distinguishing which features a camera must have to rise above the PHD (push here dummy) level. To repeat, these are focus, setting the ISO, setting the aperture, setting the shutter speed, and in the case of digital cameras choosing the format, such as RAW or JPEG. These have been covered at moderate length. Additionally, the mindful photographer should consider which format film camera they wish to use, or alternatively, what sort of digital sensor system.

Formats

Basically, a film camera is a miniature *camera obscura* with film or light sensitive material in it. Digital cameras have sensors instead of film, but otherwise they are very similar in construction. In the case of film, light enters the hole and hits the film, causing a controlled explosion of the film grain. All the grains together comprise an organic mosaic that we perceive as a picture. Digital sensors encode the light that falls upon them into numbers, assigning a specific number for each pixel. All the pixels together comprise a grid-like mosaic that we perceive as a picture. There is no one camera that is best for all situations and users. Cameras are available in different designs and film formats, and in the case of digital, different sensor sizes. It is good to be clear about the different needs these various cameras fulfill before acquiring one.

Film Formats and Camera Types

The most basic camera is a pinhole camera. This is something you can make yourself with an oatmeal box, a needle, and some black tape A pinhole camera can be any format. It simply depends on how big the box is.

The next level in sophistication is called a viewfinder camera. These cameras are usually made of plastic. You view the picture through a small window (which is called the viewfinder on other types of cameras), rather than directly through the lens. Viewfinder cameras have primitive exposure control because they do not generally allow detailed aperture and shutter speed settings. A similar looking camera that does allow sophisticated exposure and focus control is called a rangefinder camera. With this type of camera, the exposure control is located on the lens rather than the body, making each lens somewhat expensive. They are very quiet cameras with the added feature that the flash can be synced at any speed. Rangefinder cameras have a leaf shutter built into each lens.

Most entry level serious photographers begin with a 35mm SLR (single lens reflex) small format camera. They are affordable, easy to carry around, tough and durable, flexible in their applications, and straightforward in the sense that you see and focus directly through the lens. Single lens reflex cameras have a focal plane shutter built into the body of the camera, allowing the body to control shutter speed. On the negative side, due to the flapping mirror and moving curtain they are rather noisy. Also, given the small format, they produce photographs with excessive grain.

There are a number of formats that are lumped into the category of medium format. These are 4 x 6 cm, 6 x 6 cm, 6 x 7 cm, and 6 x 9 cm. Specialized panorama film cameras can be as wide as 6 x 18 cm. Six centimeters is equal to 2 1/4 inches. When the size of the film is so much bigger than 35mm it can be enlarged much more with finer grain rendering far better detail. On the negative side these cameras are much larger and more expensive than smaller format cameras.

The next size up is called large format. Again, the term large format refers to a number of choices including 4 x 5 inches, 5 x 7 inches, 8 x 10 inches or very rarely larger. These cameras are used for a number of applications including landscape, directorial, architecture, still life and product photography. They produce very large prints with amazing detail. Large format cameras are called view cameras. They generally require the use of a tripod. One views the image upside-down and backwards, like a mirror image, under a black cloth. They have a bellows and moveable parts, like a room where the floor, ceiling, and all the walls can be moved. These movements are called the rise, fall, shift, swing, and tilt, allowing perspective correction, distortion, and increased sharpness in specific situations

Digital Formats

Digital cameras also come in different formats and sensor sizes. In fact, a medium format film camera like the Hasselblad, or a 4 x 5 large format film camera can become digital simply by attaching a digital back instead of a film back or film holder respectively, where the camera receives the light. However, these backs are extremely expensive. Digital image sensors have been produced in over 50 sizes, but only five or six sizes are typically still produced that are comparative to small format film. A full-frame sensor is the same size as 35mm film, however, it is much more expensive than a 35mm film camera. Entry level digital DSLR (digital single lens reflex) or mirror-less digital rangefinder cameras have smaller sensors and are much less expensive. Cell phones have extremely tiny sensors. They are so small that deliberate shallow depth of field is only possible with extreme close-ups.

The general rule of thumb is the smaller the film format, or in the case of digital the smaller the image sensor, the more depth of field. Generally, smaller sensors will also have poorer resolution, especially in the dark areas of an image. Digital noise looks somewhat like bad reception on a television. So, a large format film camera will have vastly superior detail and resolution, but less depth of field than an entry level DSLR. It is important to get the largest film sensor one can afford because each format will magnify the image seen through the lenses differently. If you upgrade to a larger image sensor you will also need to replace your lenses, which is an expensive proposition. A 50mm lens with a small sensor will be more magnified, meaning more telephoto, than the same lens with a full-frame sensor.

Lenses

Basics

There are two classes of lenses — fixed and interchangeable. A fixed lens cannot be removed from the camera. This is not necessarily a bad thing insofar as it keeps the cost of the camera down, and the weight of the camera light. Aesthetically speaking, sometimes it is good to deliberately limit the equipment you carry. It makes decision making swift and easy. Also, for digital cameras it more or less eliminates the concern of getting dust on the sensor.

Interchangeable lenses are available for large format view cameras, small and medium format rangefinder cameras, single-lens reflex film cameras, and also for MILC (Mirror-less interchangeable-lens camera) and DSLR (Digital single-lens reflex camera) digital cameras. If you decide to get a camera with interchangeable lenses, how do you decide what sort of system to get? The answer to that question will depend on several variables including: aesthetic sensibility, affordability, weight and bulk, and sensor size. Although it is sometimes possible to acquire adapters to use an interchangeable lens designed for one system on a different system, there is always some kind of tradeoff. For example, you can use some old, high-quality glass lenses from the 1970's on new digital cameras, but the manual focusing mechanism will not be as good on the digital camera. In making the decision of what sort of interchangeable system to get it is always a good idea to be clear about what sort of photography you want to do. If you are a slow-working contemplative photographer working with a tripod, you will probably lean towards a large or medium format film camera. If you shoot street photography, you will need less lenses, perhaps only one or two quality lenses for a small to medium format film or digital camera. If you are interested in safari photography, then a full-frame digital DSLR is probably the way to go. Many photographers are interested in a variety of approaches, and thus find it necessary to acquire more than one camera and lens.

Lenses are circular, and thus the rays of light passing through the lens are projected conically towards the focal plane of the camera. This plane is intercepted by either a square or rectangular frame, in correspondence with the traditions of Western image history. The width or narrowness of this projection of light rays determines the *focal length* of the lens, which is generally classified as normal, wide-angle, or telephoto.

Normal

There are three ways to determine whether or not a lens is *normal*. The first and the least reliable, is to simply believe what somebody tells you in a camera store. The second method is perceptual. Simply look at your subject through the viewfinder of the lens, and then look at them directly, and keep going back and forth like this. If the size of your subject stays the same, then the focal length is normal. The third method involves math. To determine a normal focal length lens for your camera, measure the diameter of the image area sensitive to light. For example: 35mm film is called 35mm because that is the distance from the top to the bottom of the film, including the sprockets. However, the actual image area of 35mm film, not including the sprockets, is 24mm x 36mm. If you measure that rectangle diagonally it will be 43.27mm. The inventor of the first 35mm camera, the Leica, decided to use 50mm as *normal*. This focal length is still considered normal for small format film today, even though it is actually a very short telephoto. An entry level DSLR camera will have a much shorter lens for normal because the diameter of the sensor is very short. Needless to say, a cell phone censor is tiny, and so is its lens focal length. Medium format varies depending on the size of the frame for example: 6 x 4.5 = 75mm; 6 x 6 = 80mm; 6 x 7 = 90mm; and 6 x 9 = 105mm. Large format 4 x 5 inch format will measure 150mm diagonally. 8 x 10 inch view cameras require a 300mm lens for normal. So, normal is relative to either the sensor size for digital, or the film format. This can be verified perceptually, as previously explained. Basically, a normal lens is free of obvious distortion. Using a normal lens is as close as you can get to representing normal perceptual human vision. However, contrary to popular belief, human vision and photographic representation vary enormously.[1] The human eye is constantly scanning the scene, and only perceives one point sharply at a time, whereas a photograph taken with deep depth of field will be sharp throughout the frame, collapsing a slice of the world that surrounds us onto a single plane.

The normal lens then becomes a basic tool to reduce distortion and approximate human vision, free of claims to objectivity, and a means to share what others may have overlooked. The normal lens is a good choice for the photographer who understands they have many choices, but want to keep things simple anyway. Sometimes refining one's gear and paring down needs to a minimum can keep the wheels of casual yet serious photography greased and rolling, unburdened by weight and the never-ending longing for more. The normal lens stands out as a clear middle way on such a path.

Wide-Angle

Basically, a wide-angle lens is any lens with a focal length shorter than normal. Perceptually, wide-angle allows the photographer to see a broader angle of view through the viewfinder, making the subjects appear smaller than they would in physiological vision. It's like stepping back, except that you don't have to physically get further away. In terms of depth of field, however, it has the same effect as stepping away, which is to say, wide-angle lenses render the world with deeper depth of field. The wider the angle lens, the deeper the depth of field, and the broader the angle of view. This is why architecture photographers like wide-angle lenses. They are also quite practical for when you simply can't get far enough away to include everything in the frame you want. For 35mm film cameras, typical wide-angle focal lengths are 35mm, 28mm, 24mm and so on to fisheye lenses.[2] The later renders an image that looks sort of like a reflection in a round silver Christmas tree ornament. It is totally distorted. You can think of distortion either as a quality or a drawback. There is nothing inherently wrong with distortion in visual art or music. A lot of electric guitarists go out of their way to achieve specific qualities of distortion. However, the fisheye lens does get old fast, giving the viewer something that was probably only interesting the first couple times they experienced it. The mindful photographer will use distortion intentionally, and never for novelty or shock value. A moderate wide-angle lenses, such as a 24mm will only give noticeable distortion in the corners of the frame. This distortion will be amplified if the photographer chooses a dramatic camera angle. A 35mm or 28mm lens is an excellent choice for the street photographer that wants a lot of depth of field and a broader angle of view, but also wishes to avoid obvious distortion. There will also be an increased sense of vastness that nicely enhances a landscape that includes much foreground and sky.

Telephoto

A telephoto lens can be defined as any lens that is longer than normal. When looking through the viewfinder the subject will appear larger and closer than with ordinary vision. Telephoto lenses bring the subject closer, and in so doing they have the same effect as moving in closer physically. Both these actions are contributing causes for shallow depth of field. Sometimes it is not possible to physically move closer, and the telephoto becomes the only option. Telephoto lenses have a particular type of distortion known as *compression*, which is a flattening out of spatial depth. This is not so much a drawback as it is an aesthetic choice. The longer the lens is, the more likely the photographer will have to pick a faster shutter speed when hand holding the camera to avoid accidental blur. This will, of course, force you to use a wider aperture, further contributing to shallow depth of field. If deep depth of field is desired with a telephoto, the mindful photographer must use a tripod, a slow shutter speed, a small aperture, and get as far away from the subject as possible. Only then will deep depth of field be possible with such a lens. On the flipside, using a telephoto makes it much easier to achieve shallow depth of field and selective focus. They are often used for stage photography, photographing sports events, and they are a favorite of the devious paparazzi that supply the gossip industry with the fruits of their voyeurism.

There is a device known as a *teleconverter* that can be attached between the camera and lens to double or triple the narrowness of the focal length, i.e. angle of view. Sometimes, they are little more than a tube of empty space fitted with a small optic. Generally, these are of very low quality and are not recommended unless the photographer wants reduced sharpness.

Zoom

Zoom lenses allow the focal length to be variable. A lens is not a single piece of glass, but rather an aggregate of several elements that are strategically placed to render a specific focal length with optimum overall sharpness and brightness. Generally speaking, the only part of a lens that moves in a fixed focal length lens, often called a *prime* lens, is the focus ring. However, zoom lenses typically have floating elements that allow the focal length to lengthen and shorten. The advantage of not having to always change lenses is very practical, so not surprisingly zoom lenses are very popular. Unfortunately, they are generally bigger, heavier, more expensive, and less sharp than fixed focal length lenses. There are some zoom lenses of very high quality, particularly the old Nikon glass lenses from the 1970's and early 1980's. There are quite a few very high quality zoom lenses available for DSLR cameras as well, but the best ones are very expensive.

Digital cameras have a big problem with dust settling on the image sensor when lenses are changed. It is recommended to change lenses as infrequently as possible with digital cameras, and so a good zoom can be a solution to this predicament. if one is planning to travel it is often difficult to carry a lot of gear, and so the zoom is an appropriate choice in such circumstances. Most serious photographers don't carry around a bag full of lenses. Usually one, two, or at the most three will suit their basic needs. The mindful photographer can be satisfied with very little, at peace and aware of the limitations they have to work with. It makes decision making fast, easy, and eventually second nature.

General Remarks on Lenses and Perspective

Photography renders the world similarly to one-eyed linear geometric perspective that was invented in the Renaissance. The importance of the viewer's position in space and time as the locus of a vanishing point becomes of paramount importance in this type of representational system. Renaissance perspective could have only arisen out of a patriarchal system that favored the supremacy of the individual, favoring logos over Eros.[3] Linear perspective was born from the gaze of desire, conceived out of the division of subject and object. Photography seems natural because we are habitually accustomed to Renaissance perspective rendering the world as if seen through a transparent window, not because it is by nature more objective than other forms of representation from earlier times, or from the Far East or third world cultures, none of whom used geometric perspective before colonialism. The point is, they didn't fail to invent linear perspective because they were stupid and inferior, but because they saw and understood the world in a different way.

Most people take pictures compulsively through neurotic desire, splitting the world irrevocably into subject and object. Language operates similarly, although it specializes in telling stories and relating information rather than showing things. Contrary to this dualistic paradigm, the mindful photographer lets the grasping mind rest, desire resumes its natural state of discriminating awareness, establishing the basis upon which pictures can present themselves and be gratefully received.

The mindful photographer understands the history underlying their chosen medium and how it relates to the technology of photography. The way linear perspective functions in photography can be illustrated by two cones of light coming together in the middle at one point — the optical center of the lens, the nodal point. It's sort of like a flashlight, except that the light is coming in, instead of going out. A wide beam of received light would be like a wide-angle lens, and a narrow beam would be like a telephoto. Light moves in straight lines so the cone of light waves from outside the camera continue to move straight creating another cone of light that projects upside-down and backwards on the film plane or digital sensor inside the camera. Within this circle is the frame in the shape of a rectangle[4], like

the bottom of a pyramid intercepting the sweet spot of the image area. High quality lenses are evenly bright and sharp throughout the whole plane of focus which reaches the film or digital sensor. Cheap lenses will generally have a smaller circle of light which is dimmer and less sharp towards the edges. Generally speaking, in terms of quality, you get what you pay for.

Stated simply, the framed cone of light creates an illusory window of the world. The overall sharpness of this image is conditioned by the size of the lens opening. A smaller hole will project dimmer yet sharper, thereby increasing deep depth of field, whereas a larger aperture opening will let in more light, but much of it will be scattered and out of focus. Only one plane of focus will be sharp when the lens is wide open and close to the subject.

A wide-angle lens interprets light rays broadly, causing a kind of distortion called *foreshortening*. Also, as stated earlier, wide-angle lenses deepen the depth of field, the overall sharpness. For a telephoto lens the beams are elongated, causing image *compression*. They also reduce the depth of field, making it shallower. Compression looks like paper cutouts laid one on top of the other, lacking the feeling of depth in space. A picture made with a telescope is an extreme example of this. The photographer can physically move closer or further away from their subject to change what is seen in the frame, or they can switch lenses to magnify and distance what is seen. Yet there will be a different look to the picture taken from far away with a telephoto, and a similar composition taken close up with a wide-angle. In terms of depth of field there won't be much difference because getting farther away will increase depth of field, while using a telephoto will reduce it. Getting up close will reduce depth of field, but using a wide angle will increase it. In both these scenarios there is a canceling out effect in terms of overall sharpness or lack thereof. However, the proportions and relationships between all the elements of the composition will change due to the effects of foreshortening or compression. For example, a portrait taken up close will make the person's nose appear larger and their ears, chin and forehead smaller. The same headshot made with a short telephoto (80mm -105mm) would be proportionally far more pleasant. Also, because the photographer is not right up the subject's nose, so to speak, they would more likely be comfortable and relaxed in front of the camera. A photographer who understands these things has power that should be wielded respectfully. The mindful photographer will determine what effect is appropriate in any given circumstance. In this regard, it is imperative to not exploit the subject, but operate the camera with compassion. As stated earlier in this text the original meaning of mindfulness is not ethically neutral. Mindfulness should not be used as a weapon, unless it is a weapon in the service of destroying deceit. To be ignorant of how cameras and lenses work is a poor excuse for using photography to cause harm.

1 In *Perspective as Symbolic Form, Erwin Panofsky* writes: "Exact perspectival construction is a systematic abstraction from the structure of this psychophysiological space. For it is not only the effect of perspectival construction, but indeed its intended purpose, to realize in the representation of space precisely that homogeneity and boundlessness foreign to the direct experience of that space. In a sense, perspective transforms psychophysical space into mathematical space. It negates the differences between front and back, between right and left, between bodies and intervening space ('empty space'), so that the sum of all the parts of space and all its contents are absorbed into a single 'quantum continuum.' It forgets that we see not with a single fixed eye but with two constantly moving eyes, resulting in a spheroidal field of vision. It takes no account of the enormous difference between the psychologically conditioned 'visual image' through which the visible world is brought to our consciousness, and the mechanically conditioned retinal image which paints itself upon our physical eye...", translated by Christopher S. Wood, Zone Books, New York, 1997.

2 As previously explained in the section on the normal lens, these numbers will change according to the sensor size or film format.

3 To explore this idea further read the section "Draftsman Drawing a Nude" from Geoffrey Batchen's *Burning With Desire*, MIT Press, 1997.

4 The first Kodak Brownie camera made circular pictures. They used the whole image area rather than selecting a frame within it.

Filters

Traditionally a filter is a piece of high quality glass with special characteristics placed in front of the lens, thereby filtering the light rays during exposure. Nowadays, we also speak of filters to refer to software that changes the look of an image after digital capture. This subject will be dealt with elsewhere in this text.

In the 1970's there were many dozens of color compensating filters available for film cameras because at that time the slide (35mm transparency) was often considered the end product, to be used in what was called a *slide show*.[1] One could convincingly argue that the slide show of dissolving 35mm transparencies, often synced with music, was the most beautiful form of still photography there ever was. A print, no matter how good, can seldom compete with the color and depth of a projected image on a silver screen. So, if a photographer chose to work with this end goal in mind, they needed to get it right. Slide duplications, allowing filtering after the initial exposure were never as good as the originals. There were a number of *special effects* filters that render sometimes charming, sometimes cliche outcomes, such as softening the focus with a silk stocking attached to the lens,[2] or a piece of window screen attached to the front of a lens to create a starburst effect. The most common and useful color filters were the 85B filter for using tungsten film in daylight, and an 80A filter for shooting daylight film in tungsten light. This is rarely done nowadays because color temperature can be easily changed if you shoot RAW. The most common filters still in use today are UV, polarizing and neutral density filters for all camera systems, film or digital. Yellow and Red filters are also still widely in use for black and white film photography.

UV is a designation for ultraviolet light, which is really just another name for *haze*. UV filters are sometimes called *skylight* filters, although skylight has a slight pink tinge intended to make Caucasian people look a little rosier. The most practical reason to use a UV filter is simply to protect the lens. Scratching a $15 - $30 filter is far preferable to scratching a lens that costs hundreds of dollars. When you buy a pair of sunglasses that has UV protection, all that means is that the lenses of the sunglasses are made of glass or plastic. All glass or plastic cuts ultraviolet light. UV cuts the haze and makes the image somewhat sharper looking in the distance. There is a lot of haze at the beach and in the mountains, and a UV filter can doubly protect from the salty sea air and also cut the haze. However, one should carefully consider whether or not to do this, as did Renaissance painters who deliberately added haze in the distance to increase the illusion of depth. Classic Chinese landscape painters added haze for a different reason, to balance fullness with emptiness.[3]

Polarizing lenses, just like polarized sunglasses, create an interference pattern to the light entering a lens which cuts the glare reflecting from non-metallic surfaces. Polarizing filters also saturate colors and darken the sky a bit. They should be used in circumstances similar to when one feels the need to wear sunglasses. Such bright and high contrast light is generally not ideal light for picture-taking, however, using a polarizing filter will help.

Neutral density filters are simply high-quality pieces of gray glass. They cut the light entering the lens making it possible to use wider open apertures and slower shutter speeds when necessary to achieve the desired effect.

Ironically, color filters are used exclusively for black and white film photography. In order to understand how they work it is first recommended to learn how light works. For a painter working with pigments the opposite of red is green, but for a photographer the complementary of red is cyan. The complementary of green is magenta. The complementary of blue is yellow. If you place a red filter in front of your lens, it will block the opposite color cyan from passing

through the filter and influence the exposure. In other words, it absorbs the complementary color. The sky is mostly cyan (more so than blue) and so the skies will be almost black and the clouds will pop out as if a storm were on its way. Ansel Adams (1902 - 1984) and his imitators used this effect to create very dramatic and Romantic looking landscapes. Similarly, a yellow filter will block the blue light and darken the skies as well, although not as much, rendering them gray in value. In addition to making the sky darker a red filter will make red look lighter, and a yellow filter will make yellow look lighter. If you were to use a red filter to photograph someone with a red -shirt in front of a cyan sky, the t-shirt would appear white and the sky black. However, the filter is very dense, so one would lose three stops of light, which might be enough to force the photographer to use a tripod. If the photographer is metering the light through the lens, it will be automatically compensated for, however, for rangefinder cameras, and view cameras the photographer would need to manually compensate. There are other color filters such as blue, green, orange, etc. If the mindful photographer understands how light and color mix, it will be easy to apply whatever filter is useful for the desired effect. For black and white digital photography this understanding can also applied using the channel mixer in Adobe Photoshop.

1 PowerPoint presentations and similar programs have more or less replaced the traditional slide show.

2 Cinematographer Henri Alekan used a silk stocking for Jean Cocteau's classic surreal film *Beauty and the Beast* (1946), and the same stocking four decades later for Wim Wender's *Wings of Desire* (1987). It was real German silk from the Weimar years between the two wars, and it was no longer available. Nylon does not have the same effect. He was always worried the stocking might rip.

3 Francois Cheng, *Empty and Full: The Language of Chinese Painting*, Shambhala, 1994, p. 77.

Depth of Field Synopsis

Throughout the previous chapters the term *depth of field* has been defined and mentioned in great detail. The short synopsis that follows is a repetition of key facts that should be looked at in relation to one another. Depth of field, is a technical support that determines overall sharpness or lack thereof in a photograph.

Deep depth of field allows everything in the picture from corner to corner to be as sharp as possible. Other terms for *deep* are *more* or *long* depth of field.

Shallow depth of field is used when you want only one thing in the picture to be sharp. Other terms for *shallow* are *less* or *short* depth of field.

Four things influence depth of field:
Aperture
Distance from subject
Focal Length of lens
Film Format / Digital Sensor size

Aperture:

For deep depth of field close the lens to a small aperture such as f.16.
A big number = a small hole

For shallow depth of field close the lens to a big aperture such as f. 2.8
A small number = a big hole

Distance from your subject:

For deep depth of field get far away from your subject.

For shallow depth of field get close to your subject. You need to consciously select and compose what should be sharp and what shouldn't be sharp. In order to do this you need to know how to properly focus your camera.

Focal Length of Lens:

For deep depth of field use a wide-angle lens (a focal length smaller than 50mm).

For shallow depth of field use a telephoto lens (a focal length larger than 50mm.)

Film Format / Digital Sensor size:

Small format cameras, such as 35mm give more depth of field than medium format cameras that take 120 film. Likewise, large format cameras such as a 4 x 5 view camera gives less depth of field than medium format. This can be compensated for by using smaller apertures which are standard on lenses for these cameras.

For digital cameras sensor size influences depth of field. Small sensors, such as those found in cell phones and entry level cameras have more depth of field (and more digital noise), whereas full frame sensors in professional cameras have less depth of field.

Quality of Light

What is Light?

Light is electromagnetic *energy*. On the spectrum of this energy are gamma rays at one end, then ultra-violet, visible light, infrared, and radio waves at the other end. Visible light is, in essence, a rainbow, the middle of which is the color green — the axis of the visible world.[1] Special kinds of film combined with filters, as well as digital imaging can see and record a broader band of the spectrum of electromagnetic energy allowing the photographer to picture the unseen. Thus we have X-rays, infrared photography, etc. One could say that photography is an extension of the eye.[2] In the context of this discussion we are only interested in visible light. Light is our palette as artists. We need to learn how to paint with it. Remember, to draw, delineate, or mark with light is the literal meaning of the word photography. Alternatively, we have the Japanese *satsui*, to take a shadow. Wherever there is more light, there will be more shadow too. The brighter the light, the deeper the shadow.

Direct

Understanding exposure involves knowing how to measure the quantity of light and just how much to let into the camera. The mindful photographer, indeed any reasonably good photographer must go beyond measuring quantity of light and learn how to identify and interpret quality of light. What most people consider a beautiful day is a cloudless blue sky. Not so the photographer who understands that when there are no clouds, no marine layer, no haze, then the light is going to be very strong and high contrast. In other words, difficult to work with for most of the day, particularly for the digital photographer.[3] When the light source is high, small, very bright, and far away, with nothing visible between the light source and the subject, then the light will undoubtedly be direct. That pretty well describes a clear day in Los Angeles, where there is an average of 284 clear days a year. Direct light has very bright highlights and very dark shadows. It is difficult to capture and hold all the detail in the highlights and shadows. Direct light will result in a hard, high contrast image.

Diffused

In Seattle gray skies are more frequent than the average 152 sunny days they get per year. The light there is more diffused, meaning filtered by cloud cover. Instead of having a bright, small light that is far away (the sun) as the light source, the entire sky becomes a very large, dimmer and softer light. Of course, it rains there a lot, and rain is a problem for photography. It gets the equipment wet. However, on the dry days diffusion can work well for many applications, particularly outdoor portraiture, being forgiving to the skin with gentle shadows full of detail on the face. If the photographer doesn't mind a nearly white sky, diffused light is well suited for landscape and architectural photography, insofar as it saturates the colors and reveals lots of detail, albeit without much sparkle. One must learn to distinguish between a dim diffused light and a bright diffused light. The latter generally offers the photographer a much preferable palette. It's as if the sun is about to break through, giving more volume to form. For those who live near the coast or a very large lake there are a couple months a year when the photographer is blessed with a type of weather known as *the marine layer*.[4] This occurs when a layer of air above a body of water is denser than the air above the layer, creating a diffusion which is much lighter than fog. This is a beautiful, all too rare light for photography. One could say it is gourmet light for the light connoisseur.

Directional-Diffused

A light is defined as diffused when the entire sky becomes the light source. However, when the light breaks through in one spot, it has more of a sense of direction and edge to it. This is particularly true when photographing indoors with the light coming indirectly through a window or skylight, bouncing off the white walls of a small room. Directional-diffused light is a very pleasant and easy light to work with. It has more contrast than diffused light, but not too much, as with direct light. Both film and digital have the latitude to capture the full tonal range of directional-diffused light without much fuss and adjustment in exposure, development or digital acrobatics. There is a clear apprehension of which direction the light is coming from, which makes the image feel very natural and uncontrived, even if it isn't. Its applications extend throughout the gamut of photography.

The Golden Hour

Early and late in the day, when the sun is low on the horizon it passes from being predominantly red to yellow. In the morning the shadows shorten towards midday, and in the afternoon they lengthen towards nightfall. At these times, when the light of the sun strikes the earth at a low angle an incredible amount of texture is revealed. Also, the light is no longer peaking in brightness, it is gentler, causing photographs with increased color saturation within a dynamic range that film and digital capture can accommodate. How long will this period of peak gourmet light last? It depends on where you are on the planet and what time of year it is. In Los Angeles the golden hour is longest in summer and shortest in winter. In Iceland it might last for several hours much of the year, whereas in Haiti it might last less than fifteen minutes. Generally speaking, the closer you are to the equator, the shorter the golden hour will be. Also, summer days are longer, and so the golden hour will be too.

The Magic Hour

The magic hour isn't really an hour, but rather a short period after the sun has set till the edge of twilight. During this time the light is extremely gentle. It is generally necessary to use a tripod due to the dimness of the day's remaining light. There is a feeling of mystery associated with the magic hour, an intermediate zone between the extremes of day and night. The classic film *Days of Heaven* (1978)[5] was shot mostly in the romantic magic hour light, giving this movie a very special quality. The magic hour is best suited to color photography.

Stormy Weather

Just before a storm cracks open the sky with a downpour, and also just after when the sidewalks and earth are soaked, the light is very dramatic and special. It's basically directional-diffused light on steroids, which is to say, it is enhanced and exaggerated with swiftly changing skies. The landscape painters of the Romantic era, particularly Casper David Friedrich (1774-1840) in Germany, and the Hudson River Valley School of Painters, such as Thomas Cole (1801-1848), delighted in the sublime violence of this kind of light. The light of stormy weather can be seen in the work of many photographers as diverse as Ansel Adams, Stephen Shore, and William Eggelston to name but a few. In other words, weather is not necessarily a problem. The mindful photographer knows how to make lemonade out of lemons, how to turn threatening skies into a wrathful display of irresistible exaltation.

Light as Metaphor in Psychology and Spirituality

Light is not a substance, but rather an energy. Shadow is the absence of that energy. What is the meaning of light and shadow? There are many answers to this question. Anthropology tells us that the myths we live by have been *naturalized*, meaning we take certain things to be true without ever questioning or analyzing them. For example: light is good and dark is bad. This creates problems for people with dark skin, and so we also have counter-myths. In Buddhism, to be enlightened is to be fully awake, having conquered all delusion.[6] In the Eighteenth Century European intellectual tradition, the Age of Enlightenment refers, in brief, to the doctrines of rationality, progress, and separation of church and state. Both of these extremely different uses of the word enlightenment contain the word light.

In whatever way a culture or tradition conceives of ignorance, it is light that dispels the darkness of ignorance, and so the good guy rides into the sunset on a white horse. It is not a coincidence that in *Star Wars* Luke Skywalker is blonde and Darth Vader is garbed in black. Likewise, in the trilogy *Lord of the Rings* the wizard Gandalf the Gray gets a promotion after he slays the dragon, becoming Gadalf the White. Meanwhile, the dark lord Sauron is making trouble in the East. These contemporary myths inherit the conventions of fairy tales from long ago.

They are the continuing myths we live by. The light is awareness, and the lack of that is the shadow realm, the unconscious, everything about ourselves that we are unaware of.[7] Generally, the shadow gets a bad rap, just like the crow.

Psychologically, the shadow is composed of the unconscious dark aspects of our personality, what Robert Bly called "the long bag we drag behind us."[8] Carl Jung pointed out that it takes considerable moral effort to confront the contents of that bag. It has within it all the unrealized dreams and uninhibited instincts we have been told to suppress since we were tiny children. Marie von Franz has written that the shadow is a "mythological name for all that is within me that I cannot directly know." The great myths like *Iron John* address the process of examining the dream bag, and in so doing conferring a self-empowerment. This means being honest with yourself and sharing it out loud instead of being a silent victim. We all carry light and darkness within us, and we must try to express and release this energy so as not to be held captive by it. In other words, you must pass through grief, fear, anger, and pain to manifest wisdom. Love your grief without judgment in a pure moment and compassion will arise without contrivance.[9]

In any event, coming back to earth for a moment, the mindful photographer is aware of the play of light and shadow that surrounds them as they walk with their cameras. They are also aware that pictures can work on the viewer emblematically as extremes, like candles, or spotlights. Metaphor invites us to make a leap of the imagination to something not pictured, perhaps a quality, an atmosphere. The mindful photographer drags an ever lighter bag behind them, making it easier to be anchored in the moment, see, and translate that awareness into a compelling picture.

1 In his book *Die Farbenlehre / The Theory of Colours* (1810), Johann Wolfgang Goethe considered green to be the most harmonious color because it is in the middle of the rainbow spectrum.

2 In his highly influential book *Understanding Media: The Extensions of Man* (1964), Marshal McLuhan includes *Photography: The Brothel-Walls* as one of the extensions.

3 Digital capture and transparency film have the least margin for error with regard to exposure because they can only register a narrow latitude of light.

4 The fine art photographer Peter Holzhauer named a series of his photographs after *the marine layer*.

5 *Days of Heaven* was directed by Terrence Mallick. The cinematographer was Nestor Alemdros, with additional photography by Haskell Wexler.

6 Delusion in this context means specifically the four Maras: The Mara of the psycho-physical aggregates we take to be our self, the Mara of death, the Mara of the afflictive emotions, and the Mara of luring distractions. In other words, Mara is to take something to be solid and true that is in actuality empty of inherent existence, yet keeps one bound in the cycle of delusion.

7 Through meditation and dream yoga we can dive into the unconscious and shatter that state into awareness.

8 From *A Little Book on the Human Shadow*, by Robert Bly, Harper, San Francisco, 1988.

9 These insights were graciously passed on to me by Marcus Daniels, and gratefully received.

Darkroom

How to Develop Film

Working in the darkroom is similar to cooking. A good home cooked meal depends on good ingredients, right timing, right temperature, and a patient attitude. If you can follow a simple cooking recipe, you can develop film. The first step is to read the recipe and make sure you have everything you need. The next step is to get the exposed film out of the film cassette and loaded on either a metal or plastic reel and tank without any light reaching it. You can do this in a film loading room which is completely dark, or using a film loading bag or tent. The latter options allow you to work in the light while your hands work with the film and reel in darkness. Make sure no light hits the film. If you are in a film loading room be sure to lock the door. If you are using a dark bag or tent be sure the elastic around your arms is directly against your skin, allowing no light leaks. Then you are ready to open the film cassette can opener using a simple ordinary can opener. Do not be meek and mild about this, but rather open it with a degree of savagery. Rip the lid off of either end. Different instructors seem to favor one end or the other, but at the end of the day it doesn't matter, just get it open. Generally speaking, the end of the cassette with the spool sticking out will be easier. The next step is to slip the spool with the film still attached to it from the cassette. Don't let it completely unwind, but rather hold it cupped in one hand and cut off the film leader with the scissors. Don't worry about losing some of your pictures. That part of the film was completely exposed to light when you loaded the roll. Now, hold the end of the film you just cut on the sides by the sprockets, and let the rest of the roll gently fall. There is another spool attached to the other end of the film, the weight of which will act asn an anchor to allow it to dangle vertically.

Loading a Plastic Reel and Tank

Both metal and plastic tanks are good, each with their own advantages and disadvantages. If you are using a plastic reel you must start from the outside of the spiral and work your way to the center. Make sure to orient the reel while the light is still on so that you know where to place the film. You can either push it in or pull it in, but the main thing is to get the film past the ball bearings. Once you have succeeded in that, it should go the remainder of the way in easily. Plastic tanks are generally considered to be easier for the beginner, however if they are not completely dry the film will get stuck in the middle. Whether working with plastic or metal, be especially careful to load the film on the reel straight. If for any reason it does get stuck, close the tank so that it is light tight, get a new dry reel, and start over. It is necessary to practice loading film on reels in the light using exposed practice film until one is completely familiar with the procedure. Then it will be easy to do in the dark. The first time is a little unnerving, but after that its really easy. There is no substitute, be it a book or YouTube video for being shown how to load film on a reel by a teacher. Once the film has been loaded on the reel, use the scissors to cut off the spool and place it carefully in the tank. Be sure to place a special spool that comes with the kit in the center of the reel with the outward protruding lip on the bottom, then place the plastic funnel over the reel and turn it clockwise until it clicks. At this point the plastic reel is light tight. The extra plastic cover is used during the development process so that the chemicals will not spill out during agitation

Loading a Metal Reel and Tank

If you are using a metal reel you must start from the center and work your way outwards. It is crucial that you work in the correct direction, otherwise you will start from the center and continue in the center. If you are right handed hold the reel with your left hand with the end of the spiral facing upwards on the left. Then place the film in the center of the reel. Sometimes there is a little mechanism that holds the film in place, sometimes not, in either case simple hold the film in place with the thumb and index fingers of your left hand while the right hand gently bows the film and winds it on the reel. After the first few turns you are home free. Metal reels can be loaded even if they are wet. They load somewhat faster, but one must be sure that the reel is not bent out of shape from having been dropped. Such a reel will be difficult or impossible to load. Metal reels and tanks require less chemicals because they are smaller. This is good for both the wallet and the environment. After the film has been loaded cut off the spool and place it in the tank. Simply place the cover of the tank on top and you are ready to go. There are fewer parts to keep track of than with the plastic system.

Devoloping Film

If you have a number of liquid graduates available you can prepare them all ahead of time, each containing a specific chemical: developer, stop bath, fixer, and hypo clearing agent. However, if you only have access to one graduate you can still quickly wash it out and fill it with the next chemical in the sequence between steps in the process. The first chemical to prepare is the developer. It can be used straight, which is to say, full strength, or it can be diluted. For example: 1:1 means one part full strength, one part water. If you are using a plastic tank for 35mm film this would amount to 5 oz. developer and 5 oz. water. For a metal tank it would need less chemicals - 8 oz. for full strength or 4 + 4 oz. for a 1:1 solution. Likewise, a 1:2 solution designates one-part full-strength developer mixed with two-parts water. Full strength will require a shorter developing time than diluted. The latter has the advantage of allowing greater variation in the developing time, and it is also less expensive, and gentler on the environment. Make sure the developer solution is exactly 68 degrees. If it is warmer, then place some ice in a tray and put your graduate in the tray. The solution will cool down fairly quickly. If the developer solution is colder than 68 degrees, place the graduate in a tray of hot water and the temperature will rise within a matter of minutes. It takes a little time and patience to get this step of the process right, but in the long run it will save you time and money because well developed negatives are much easier to print. Once you have prepared the developer you need to set a timer, be it a traditional darkroom Graylab timer or a cell phone. You will need to use either a chart, such as the one provided by *Freestyle Photographic*, or check the *Massive Developing Chart* online at: http://www.digitaltruth.com/devchart.php. There is also a smart phone app available from the same source for this purpose. You simply need to cross reference the specific film you are using with the specific developer and dilution you have chosen to use. The chart will assume all temperatures to be 68 degrees, however the website may give more options. It is best to use the same temperature each time because temperature is one of several variables, along with dilution, agitation, and time duration that control contrast in film development. By keeping the dilution, agitation, and temperature always consistent we can easily arrive at only one variable — development time duration. The beginner should follow the advice of the chart, website, or app for how long to leave the film in contact with the developer. Advanced students can shorten or lengthen this time to decrease and increase contrast, respectively. Once the developer and timer are set up, simply activate the timer and pour the developer into the tank. Tilt the tank diagonally a bit and pour the developer in like you were pouring a beer. Just as this will give a beer less head, it will give the film less bubbles. If there is a bubble on your film, it means that the developer is not reaching that part of the film. If the bubble stays there too long it will leave a

circular mark that will be clearer, i.e. less developed than the remainder of the roll. This will print as a dark or black circle. To avoid this, and also to keep the contrast invariable, agitate the film consistently. Best is to follow these simple instructions: agitate for the first thirty seconds and then gently tap the tank on the surface of the sink so that any bubbles stuck on the film emulsion will alight. Then wait thirty seconds and agitate for another five seconds. Do this consistently, agitating five seconds for every thirty seconds until the timer reaches zero. Generally, it is good to agitate not too timidly or too aggressively, but rather in such a way that the developer reaches every part of the film without creating bubbles. A simple figure eight infinity loop is recommended, but the main thing is to keep it consistent. Your style of agitation reveals your personality. It's fun to watch people agitate.

The second chemical in the process is called *stop bath*, which is a simple acetic acid solution similar to vinegar (but don't use vinegar). After the developer has been emptied in the sink, then immediately pour in the stop bath and the developing process will come to a halt. Some teachers advocate using water instead of stop bath, claiming that it halts the process too immediately and violently, but there is little or no evidence to support this claim. Stop bath helps keep the process precise and preserve the strength of the fixer, the next chemical in the process. Leave the stop bath in the tank for 15 - 30 seconds and then recycle it. It lasts for a long time and can be used again and again. There are two types of stop bath, one that is clear and another that is a deep saffron color. The latter is called indicator stop bath because when it is no longer good it turns the yellow color into a dull purple. Indicator stop bath costs a little bit more, but it is well worth it. When it is exhausted you can simply and safely pour it down the sink without guilt. It will not contribute to pollution. A word of caution, however, please note that full strength stop bath is extremely toxic. If you add water to the acetic acid, it will erupt as a dangerous gas that will make your nostril hairs feel electric. Follow the AAA rule: add acid after, meaning start with water and then add only a little bit of acid to the water when preparing the solution. Generally, at a school the stop bath will already have been pre-mixed by a school lab tech or aide, and so it won't ever be an issue unless you set up your own darkroom.

As has already been mentioned, the next chemical in the process is *fixer*, a special kind of salt also known as *hypo*, which is short for sodium thiosulfate. Another variant of hypo is rapid fixer, ammonium thiosulfate. As the name suggests it works more quickly and also contributes to archival protection, although it is considerably more expensive. The terms fixer and hypo will be used synonymously in this text. Simply fill the graduate with fixer and leave it there for eight minutes. If the fixer is fresh, or the rapid variety you can leave it in the developing tank for less time. Simply follow the instructions. Agitate exactly the same way you did with the developer. When the timer once again reaches zero, recycle the fixer. It can be used several times. One can check the fixer with a solution called *hypo check*, and other testing methods to make sure it is still good. It is best not to put the fixer down the sink without first reclaiming the silver through a filtering process.

Once the film has been fixed it is no longer sensitive to light. However, before opening the tank and looking at the film put your tank under running water for about one minute. Then, empty the water from the tank and add *hypo clearing agent*.[1] This does exactly what the name suggests, it clears the fixer from the film much faster than if you were to only use water. Since water is precious this stage of the process is indispensable. Agitate continuously for two minutes, and then recycle the hypo clearing agent.

The next step is to put the tank and reel under running water for about five minutes or more. Alternatively, open the tank and take out the reel and place it in a special film washing apparatus that allows you to wash several reels at once. Either way will work fine. The water pressure need not be to strong, rather

just enough to replace the water in the tank about twenty times.

Now you can take the film off the reel. If you used a metal reel, simply grab the end of the roll and it will pull off with little effort. Plastic reels are a little trickier to open, and you should practice opening them before you start the process. Opening a plastic reel is similar to opening a jar, except the lid is on both ends. With the reel held vertically in both hands twist the right side clockwise while gently pulling outwards. Simultaneous to this action, twist the left side counter-clockwise while pulling outwards gently. It will even work if you only twist one side. However, simply pulling hard won't get it open. What you need is a spiral motion. At this stage of the process it is crucial to be very careful because the film is wet and the emulsion is soft, so it is very easy to scratch your film.

Now it is time to insert your film in the *wetting agent*, commonly known by the Kodak brand name *Photo-flo*. Be careful not to let the film touch either other parts of the film or the sides of the tank or tray holding the *photo-flo*. Run it back and forth gently a few times and then stretch it out over the sink diagonally so that the excess *photo-flo* drops off. This will speed up the drying time. Skipping the *photo-flo* stage will guarantee water spots on your negatives. This looks sort of like a dirty windshield on a car. Also, if the *photo-flo* is too strong it will cause soapy residue. It is recommended to mix the *photo-flo* with distilled or filtered water, although this is not always possible when working in a group lab situation.

The last stage in the film processing sequence is to hang your film to dry. If you have your own home darkroom you can purchase a plastic gown bag for very little money and let the negatives air dry within it. A general rule of thumb is that the less disturbed the film is during the drying process in a dust free environment, the cleaner your negatives will be. Most schools and commercial labs, however, use special film drying cabinets with fans that considerably speed up the process. These usually dry the film in around 20-25 minutes rather than the three or more hours it would take to air dry. Be sure to wait around thirty seconds after you have turned the fan off before opening the cabinet door to check if your film is dry. If the film is not hanging straight, but rather buckled this is a clear indication it is not yet dry. The bottom part of your film will dry last, so touch there to check. If that part is still wet or sticky close the cabinet immediately and turn the fan back on. Never turn up the heat in these cabinets beyond the recommended amount. If the film is too hot when it dries it will cause a phenomena known as *reticulation*, which looks like the grain of your film has exploded.[2]

When the film is completely dry, best is to lie it down glossy side up on a clean light table. Hold your strip of negatives up to the light and look to see if there are any water spots, or if there is a soapy residue from the *photo-flo*. If so, get the negatives wet again and put them through a fresh wetting agent, and hang them to dry again. When your film is dry and clean, carefully cut the negatives and slide them into negative preservers. Do all this before examining your negatives in detail. Don't try to handle more than one roll of negatives at a time, as they will likely scratch each other. If you follow these recommendations you will only very rarely have to retouch due to dust and scratches. If you are sloppy about this stage, then you will have to invest a lot of time in retouching your prints.

If at the end of the process your film is clear with no numbers, this is an indication that you did not follow the correct sequence of chemicals. If the film is clear with numbers, you did not load your camera correctly. If the film is too thin, you either underexposed, underdeveloped, or both. If the film is too dense, you either overexposed, overdeveloped, or both.

Store your negatives in a notebook specially designed to keep your negatives away from dust.

They cost a little bit more than an ordinary notebook, however, in the long run you will save a lot of time and money from not having to reprint and retouch all the time.

Evaluating and Caring for Negatives

It takes a long time to accumulate the experience needed to easily evaluate one's photographs. This begins with having the confidence that you will be able to do it someday. The rest is trial and error, work and play.

Slide your negatives into protective sleeves. Place these on a light box. Use a magnifying loupe to examine the negatives closely. Look for clues indicating proper exposure and development. If the negative has no shadow detail in the clearer parts of the negative it was underexposed. If it has no highlight detail it in the denser parts of the negative it was overexposed. If there is detail in both the dense and thin areas, the negative should be printable. If the numbers along the sprockets are very thin and transparent, most probably the film was underdeveloped. If the numbers are extremely dark, and there is no detail in the dense areas of the negatives, chances are the film was overdeveloped. The loupe will not magnify the image enough for you to determine if it was well focused and sharp with no blurriness. You will have to put it in the enlarger to see. It bears repeating that, in the meantime, store your negatives in a box-like notebook that closes on all sides to keep dust out. The next step is to make a proof sheet, which will be much easier to evaluate than negatives if made properly.

Making a Proof Sheet

Please note that this procedure needs to be demonstrated by a teacher. What follows is to help the student remember the details of those demos.

Some teachers will demonstrate how to make a photogram before showing how to make a contact sheet. Both use essentially the same method.

A proof sheet is also known as a contact sheet. Begin by elevating your enlarger so that it projects a large rectangle of evenly illuminated light. Stop down the lens around two clicks (f. stops). Place the proof printer in the center of the rectangle of light and turn the focus light off. Open the glass, place a strip or sheet of enlarging paper emulsion side up (the shiny or sticky side), and center your sheet of negatives over the paper. Resin-coated paper (RC) is generally preferable to Fiber-Based paper (FB) for the purposes of making proof sheets. RC paper bends convex with the emulsion side up. Fiber-Based paper, used for advanced fine art printing, bends cocave or inwardly the opposite direction. Close the glass. Cover all but a small section of the paper and set the timer to 3 or 4 seconds. Expose that section. Repeat this procedure section by section until the whole test strip or paper has been exposed. Process the RC test-strip in the developer for 90 to 120 seconds with constant agitation. Rock the boat or make waves. Next, carefully move the paper to the stop bath tray without getting stop bath on the tongs. Return the tongs to the edge of the developer tray and pick up the tongs for the stop bath. Agitate for 15 to 30 seconds and then move the paper to the fixer tray. If you are not planning to keep the test it is sufficient to only fix it for one minute before taking it into the light to evaluate it. If you are planning to keep anything you fix, it is necessary to leave the paper in the fixer for at least three minutes before exposing it to white light. After evaluating it, return the print to the fixer for another three minutes before moving it to a tray of water known as the *holding bath*. Place it in the holding bath upside-down so the heavy metals of the fixer will more easily fall off and wash away. Throw away whatever you don't want to keep. No need to waste water washing strips that are going to get thrown away anyway.

Examine the test strip to find the shortest exposure that turned the sprockets black. Until the sprockets and the space between the pictures (known as the film base plus fog) turns black there will be no black within the frame either. Make the whole proof sheet

with the shortest exposure possible to turn the film base plus fog into black on the proof sheet. The only exception to this is when your entire roll was either over or underexposed. Please note that it is not necessary to use a variable contrast filter when making a proof sheet. However, if you do, it should be a #2 filter.

Evaluating a Proof Sheet

If you follow the procedure above, it will be easy to determine which exposures are overexposed, underexposed, underdeveloped or overdeveloped. The frames that are too light were overexposed. The frames that are too dark were underexposed. If all the frames have no deep black or bright white, the film was underdeveloped. If all the frames have only black and white but very few grays, the roll was overdeveloped. The frames that look the right value, meaning not too dark or light with a good black and white and a full range of grays — these frames are likely to be very rich, and are also going to be easy to print.

Making a Print

Now pick your favorite frames from the proof sheet. Take the negative holder out of the enlarger and open it. Place your chosen negative glossy side up, with the top of the frame towards you, and center it in the open space of the holder. If your negative carrier has pegs, make sure the sprockets slide under them, otherwise your negative will not be flat and will not print with even sharpness. Dust off the negative with either a blower brush or compressed air. If you use the latter, be sure to hold the can upright and position the nozzle to blow over the surface with a quick blast of air. Put the negative holder back in the enlarger. Use the elevation mechanism of the enlarger to move it up and down. Compose the image on your enlarging easel. Do not use a proof printing frame. Make sure you dedicate one sheet of paper to focus on. Henceforth, this will be called the *focusing sheet*. This can be used repeatedly. Use the back of the paper, as this will be brighter than the front. If you don't do this, the grain in your print will probably appear mushy. The thickness of the piece of paper must be considered as part of the equation that equals sharp enlargements. Your lens should be wide-open when you focus. Otherwise, the dimness will make it hard to be precise. Use a grain focuser. Without this tool you will not be able to focus your enlarger accurately. Turn the focusing knob until the grains of your film are sharply visible and in maximum focus. They will look like sand or miniature tablets. Now, place a #2 variable contrast filter under the lens in the filter tray, and make sure it is centered in the rectangle of light being projected. Click your lens aperture 1, 2 or 3 clicks down, depending on the density of your negative. Turn off the focus light. Remove the focusing sheet and replace it with a test strip. Follow the procedure for exposure and processing described above for making a proof sheet.

Evaluating a Print

When you evaluate your first test print you need to make five decisions.

You should make the decisions in the following sequence:

1. Decide if you like the picture.
2. Decide if it is sharp.
3. Decide the correct value.
4. Decide the correct contrast.
5. Decide whether or not to dodge and burn.

1. Sometimes we have very high expectations about a particular shot on a roll and we feel disappointed when we see the first print because our expectations are not met. It is often a picture we had forgotten about that turns out to be the most interesting. In any event, decide if the picture you printed is worth continuing with.

2. Is the picture sharp? If not consider if you want to continue devoting time and expense to printing that frame.

3. Value means the lightness and darkness of your print. Sometimes value is called "print density."[3] On a television or computer monitor we would call it brightness and dimness. Make a test strip with several different exposures strategically placed on your enlarging easel to give you the maximum amount of information. Pick the section that seems not too light and not too dark, mindful that not all areas of your print are going to be the same value (such as the sky and foreground). In other words, make an educated guess based on the test strip. Depending on the composition it might be necessary to lay the test strip on the easel horizontally, vertically, or diagonally. Make several exposures at 4 seconds each. If you make seven exposures, for example, the different sections of the strip will represent 4 – 8 – 12 – 16 – 20 – 24 – 28 second exposure times. Ideally, the best time will be somewhere in the middle.

5. Contrast is the dynamic range of black and white. Just black and white with no gray is high contrast. A sampling of grays with no solid black or white is low contrast. A good black with shadow detail, a solid white with highlight detail, and a full range of grays in-between is what you should be trying for. Make your test strip with a # 2 filter. That will give you normal contrast with a well-exposed and well-developed negative shot in ideal conditions. If the print is too gray, without a good black or white, increase to a filter higher than #2. If it is not gray enough, decrease to a filter lower than #2. Just how far to go is a matter of experience or trial and error. If you increase to a number 4 or higher filter you need to double the exposure by either doubling the time or opening the lens one aperture, thereby making the light twice as bright. If you don't use a variable contrast filter for your first test, but rather make a test strip with no filter, and your first print isn't perfect, which it isn't likely to be, you will have to start over with a filter. Therefore, the entry level darkroom printer should always start with a #2 filter when using variable contrast paper.

Alternatively, you can use graded paper instead of variable contrast paper. Graded paper is available in grades 1, 2, 3, 4, and 5. Generally, you start with a #2 grade, and if that is too high in contrast you switch to #1. If the print you made on #2 graded paper is too low in contrast, you would move to a higher grade. This way you don't need to fuss with a lot of filters, or worry about scratched filters, but you will have the added expense of buying several packs of paper. Also, the only way to get in-between the grades is to use two tray development, which will be addressed later in this manual.

4. The fourth decision you need to undertake is whether or not to make some areas of the photograph lighter and some areas darker. *Dodging* makes part of the picture lighter by blocking light before it reaches the enlarging paper. You need to make a dodging wand with cardboard taped to a thin wire that easily vibrates. Hold this between the enlarging lens and the enlarging paper during the initial first exposure to reduce the light that hits the paper in the areas you want to be lighter. The higher you hold the wand (closer to the enlarging lens) the more light it will block, and vice-versa. *Burning* makes part of the picture darker by adding light. In order to do this, you will need to make a burning board. Purchase an 11" x 14" piece of illustration board, black on one side and white on the other. Make a hole approximately ¾ of an inch in diameter in the middle. Hold the board with the white side up and the dark side down between the enlarging lens and the enlarging paper. Make a second exposure, and the light that passes through the hole will render those areas of the print darker. You can also use the edge of the board to darken skies, etc. Keep the wand and board vibrating at all times. It should not be apparent to the viewer that any dodging or burning was done. Make it invisible.

Common Problems

There are four main problems, and four more subsidiary combinations, each with their own possible solutions. These are:

1. underexposure
2. overexposure
3. underdevelopment
4. overdevelopment
5. underexposure and underdevelopment
6. underexposure and overdevelopment
7. overexposure and underdevelopment
8. overexposure and overdevelopment

1. If your negative is underexposed it will appear very thin. Your choices in printing such a negative will be limited to three possibilities. In order to get a good black, you will have to make a print that appears too dark. Alternatively, you could reduce the light hitting the paper and get a better overall value, but you would have to sacrifice a good black. Thirdly, and most often preferably, you could print the picture lighter than the first method and darker than the second, and increase the contrast somewhat by increasing the variable contrast filter to a higher number, thereby getting closer to a good black, yet still not entirely arriving. As you can see, underexposure is not easily fixed in the darkroom and requires significant compromise to approach an imperfect result.

2. Overexposure means the highlights are blocked up in your negative and the shadows and mid-tones have more information than necessary. Overexposure will dramatically increase the grain that forms your images as well. You will need to print these negatives with the enlarging lens wide open. Your exposure times will be very long. The highlights will need considerable burning. Try switching to a #0 or #00 contrast filter for the burning, as this will reduce the time needed for burning. Most probably your highlights will become slightly gray but lack detail, although contemporary films hold a lot of detail in blocked highlights and the results are likely to be better than overexposed digital files.

3. Underdeveloped negatives look thin, like underexposed ones, but they hold more detail in the shadows. Therefore, they can often be satisfactorily printed by simply using a higher number variable contrast filter, and stopping the enlarging lens down to a dimmer setting.

4. Overdeveloped negatives appear very high contrast. They must be handled in a manner similar to overexposed negatives, but especially require a lower than #2 filter, combined with considerable dodging and burning.

5. Combined underexposure and underdevelopment is usually a hopeless case. A good print is impossible to make.

6. Underexposure and overdevelopment may work well when photographing on a cloudy overcast day, but will be disastrous for scenes shot in the bright Southern California sunshine. If shot in normal light (a four stop span from shadow to highlight detail) the negatives will have insufficient shadow detail from underexposure, and be lacking in highlight detail from overdevelopment. Such negatives will require considerable dodging and burning and rarely generate a satisfactory result.

7. Overexposure and underdevelopment is ideal for a bright and high contrast scene. It is the worst for an overcast diffused lighting scenario. For normal light the negatives will appear dense in the shadows and thin in the highlights. This will result in somewhat grainy prints. The best way to approach such negatives is to use long enlarger exposures with a higher than #2 variable contrast filter.

8. Overexposure combined with overdevelopment, like underexposure with underdevelopment, is usually hopeless. Reshoot.

Please note that the above advice is merely a starting point for experimenting in the darkroom. There

are more advanced techniques and uses of chemicals that can also be used to enhance and correct weak negatives. Nevertheless, it should at this point be clear that understanding how exposure and development work together is extremely important, and make the printing process far easier and less expensive.

Advanced Darkroom Printing Methods

There are a few methods recommended for more serious and experienced darkroom practitioners. These include: two-tray development; split filtering; and selenium toning.

Two-tray development is exactly what it sounds like: you use a soft developer like Kodak *Selectol* in the first tray, and then a harder developer like *Formulary 130* in the second tray. The first tray will bring out the subtle grays and the second tray will give a deeper black. You can leave the print in the first tray a short while or a longer time, depending on the effect you want to get. This method is for fiber-based paper only, which requires 2.5 - 3 minutes in the developer. You should not stay in both trays longer than that amount of time, otherwise there will be a risk of fogging the paper from extended exposure to the darkroom safelight.

Split filtering has a similar goal and effect as two-tray development. It is often used for burning in skies. For example, a very dense sky is going to take longer to burn in with a high contrast filter than with a low contrast filter, so it is not uncommon to switch filters to a lower number, such as a #0 when burning. You can also do split filtering by dividing the initial exposure into two separate exposures. Instead of doing the whole exposure with a #2 filter for twenty seconds, you could use a #1 filter for ten seconds and then do a second exposure of ten seconds with a #3 filter. The effect would be similar. However, if you exposed with a #1 filter for five seconds, and a #3 for fifteen seconds it would be slightly higher contrast than a twenty second exposure with a #2 filter. There are some negatives that benefit from this sort of treatment. In digital photography one could accomplish something similar by working with the *curves*.

Lastly, the advanced printer should consider selenium toning to make their prints more archival, and also to hammer in the depth of the black. It makes the prints five times more archival by hardening the silver. Selenium toning will give the print a somewhat eggplant purplish color and also slightly increase the contrast. Tone means the color of the black. Often when photographers speak of the tonal range of the print, they are actually talking about the range of values in a print. As this is common usage it is not really wrong, but one should be clear that tone, technically speaking, is the color of the black. In music one also talks about the tone to refer to the color of a note. There are some windblown instruments, for example, that can produce the same pitch with different fingerings, different breath and embouchure.[4] An electronic tuner can only tell if the pitch is correct, but it cannot distinguish subtleties like the airiness or boldness of a sound. Just so, tone in a fine photographic print is aesthetically subtle. It takes an extra step at the end of the printing process that should be demonstrated by someone with experience. Also, selenium is a harmful chemical and should be handled with gloves only and recycled responsibly. Other types of toners that increase the archival stability of a silver print are sepia toner and gold toner.

Concluding Thoughts about Darkroom Printing

It can easily take a full hour or more to make a good print, so don't get frustrated if the going is slow. Relax, and enjoy the amber light and watery world of the darkroom. Think of your first print as a proof print, your second as a work print, and thereafter refine towards a fine print.

1 *Hypo-clearing agent* is the generic name for this chemical, and also the brand name by Kodak. Another good brand, which is easier to use and somewhat stronger is called *Permawash*.

2 Most of the film shot at the beaches of Normandy during the D-Day invasion of France by the Allied forces during WWII was ruined because the lab technician who processed the film in England was in such a hurry to get the images done that he turned up the heat all the way causing reticulation.

3 This is the terminology used by Henry Horenstein in his excellent textbooks on photography. The term can be a bit confusing for two reasons. Firstly, print density is commonly used to refer to quantity of ink with inkjet printing. Secondly, the density of the negative determines the lightness or darkness of the print, which is rather the opposite usage by Horenstein. I have never heard of anyone critiquing a print for being too light or dark to say that it has too much or not enough density. However, it is quite common in a drawing or painting critique to use the term *value* when evaluating if it is the appropriate lightness and darkness. For all these reasons I have chosen to use the words light and dark, as well as *value* rather than print density.

4 For example, the Japanese Zen flute, the shakuhachi, played by the author of this book.

Introduction to Digital Processing

Digital photography and processing is a vast subject. This book does not attempt to deal with every detail, but rather addresses the various options to cover darkroom equivalents, which is to say, how to do the same thing digitally that we have already learned how to do in the darkroom. Also, some of the most important things that can be done digitally with photography that cannot be accomplished with film and chemicals will be addressed. However, this manual is not a replacement for a textbook that deals exclusively with Adobe Photoshop and Lightroom. Generally speaking, working digitally involves making many more decisions than one would make working analog due to the simple fact that the standard software programs available today offer many more options. Also, within a single program there are often several means available to reach a similar end. It can be very confusing to navigate these programs without having a guide. No book is a substitute for a real live teacher to quickly show you how to accomplish the task at hand. Online tutorials are the next best option, but you might need to sit through hours of instruction to learn the tools you really need, and some of the advice will be bad. This text is a third option that is at best incomplete and at worst out of date as Adobe continues to change their software on a regular basis, whether it needs to be changed or not. That being said, this manual does provide an overview of workflows that will help the aspiring photographer not get lost in the labyrinth of choices and stay on the path of mindfulness, especially when coupled with direct advice from a real live teacher.

It would be reasonable to ask what does digital photography have to do with mindfulness? On the capture end, there really isn't any difference between working analog and digital in terms of slowing down, paying attention, being in the moment and making ethical choices. However, because digital is so immediate, and because one can take an unlimited quantity of photographs, sometimes the digital photographer is less careful and adopts an attitude that they can always fix the image later. Many professionals brag about how they took 500 pictures to get the one cherry. To be fair, this viewpoint has always existed in photography except that some used to say "you can always fix it later in the darkroom." However, nowadays the "fix it later" sentiment is omnipresent, in part due to a misplaced trust in technology. How can this be countered? First of all, consider why you got involved with photography in the first place. Was is so you could spend all day in front of a computer fixing images? I doubt it. Wouldn't it be preferable to slow down and take fewer images that only need a bit of creative tweaking, rather than a complete makeover? Even though working digitally involves making far more choices than working analog, as the work flow recommendations in this book will make abundantly clear, the digital photographer who captures mindfully and edits intelligently will find that making images digitally can be absurdly fast and easy. However, prior to acquiring and owning this knowledge, most photographers working digitally just move around sliders mindlessly without even the slightest clue what they are doing. So where do we begin? We need to unlearn our bad habits, and learn a workflow based on solid principles. Our choices will depend in large part on our immediate needs and the software we have available.

This text will sketch an outline of those purposes and options. One thing all of the methods that follow have in common is that they are *nondestructive*, a term that refers to digital choices that can be easily undone. Early versions of Photoshop were notoriously destructive in the sense that every time you made a change to a file it was permanent and there was no turning back. Very often images were given too much contrast, clipping the detail away from the highlights and shadows permanently, and the color was often way oversaturated. This still happens today. The mindful photographer explores choices in nondestructive image editing.

Determining the Best Software for Your Needs

Up until fairly recently there haven't been a lot of choices for how to process and refine digital photographs. *Adobe Photoshop* was the only game in town. However, now Adobe has improved *Camera Raw* so much, that most of the work can be accomplished before you even import the image into Photoshop. Furthermore, Adobe Lightroom offers pretty much the equivalent choices in image processing as Camera Raw, with the additional ability to catalog your entire library of digital photographs, make books, pdf's, slide shows, etc., as well as the possibility to either import the file into Photoshop or print directly from Lightroom and bypass Photoshop altogether. The subtlest refinements and repairs are still generally performed in Photoshop, and these can be accomplished in a non-destructive manner through the use of *adjustment layers* and *smart objects*, which will be introduced later in this text. The possibilities are mind-boggling and often confusing. The work flows that follow are a guide to help the novice digital photographer navigate these choices without becoming overwhelmed by trying to learn hundreds of keyboard commands. Adobe Photoshop offers many very advanced features for montaging or compositing several images into one, countless retouching, skewing, warping, and filtering possibilities, adding fancy borders, text with every imaginable special effect, and lots more you never imaged could come under the category of photography. In other words, most of the features of Photoshop are for graphic artists so that they can change or add to what the photographer has provided for them. This manual will focus on the features that are designed for photographers.

Starting with Adobe Bridge

Bridge is an appropriate name for this software program because its main purpose is not to process and alter digital images, but rather to access, organize, and evaluate them on their way to either Adobe Camera Raw or directly into Photoshop. It has been called a visual media manager that allows you to look at all of your digital assets. That being said, you can also make contact sheets and slide shows, but this is not the main purpose of Bridge. It is recommended to start with Bridge because it allows you to access any image that is anywhere on your computer, on a memory card inserted in your computer, or on an external hard drive connected to your computer. Also, there is the option to directly download images from a memory card. You can re-name your files either when you download them or after you download them. You can also access them without downloading them. You can customize Bridge so that you can see your files as either small or large thumbnails, and also full screen.[1] Some people use Bridge to rate their images and also to make collections of photographs with similar subjects. These *collections* are virtual because the image is not actually duplicated. The virtual collections can be comprised from images in many diverse folders, enabling you to cross-reference and compile multiple series. You can imbed keywords and copyright information into the image metadata that will make it easier to find an image when searching for it later. You can also directly delete images.

1 To view images full screen in Bridge simply tap the space bar. Use the arrows on your keyboard to browse through your folder of images.

Continuing With Adobe Camera Raw

After Bridge it is recommended to first open your images in Camera Raw before proceeding to Photoshop. Everything you do in Camera Raw is non-destructive, and the more you do there, the less you will need to do in Photoshop. The current version of Camera Raw will support JPEG and unflattened[1] TIFF files in addition to RAW files. This is a relatively recent development which is most welcome. The easiest way to open a file from Bridge to Camera Raw is to simply click on the aperture icon in the menu bar. You can also use the keyboard command (Mac) command/R, or go to file / Open in Camera Raw. A window will open with your picture. Above the picture in the upper left will be a menu of tools. These are from left to right: the Zoom tool (Z); the Hand tool (H); the White Balance eye dropper tool (I); The Color Sampler eye dropper tool (I); the Targeted Adjustment tool (T); the Crop tool (C); the Straighten tool (A); the Transform tool (Shift T); the Spot Removal tool (B); the Red Eye removal tool (E); the Adjustment Brush (K); the Graduated Filter (G); the Radial Filter (J); the Open Preferences dialogue box (control K); rotate the image 90 degrees counter clockwise (L); rotate image 90 degrees clockwise (R). By simply holding the cursor over these tools a dialog box appears informing you of their uses. When ready, simply click and proceed to the tool or use the keyboard commands provided in the parentheses. However, before using these tools it would be best to first learn how they work with the basic and advanced image processing options available in Camera Raw. These are positioned to the right of the image.

In the upper right corner is the histogram, which is a graphic display in red, green, and blue of the dynamic range of values that comprise the whole of your image. It is extremely important to understand how to read a histogram. The left represents the shadows of your photograph. The right represents the highlights of your photograph. The mountainous middle of the graphic display represents the mid-tones of your photograph. If the picture is predominately dark or underexposed, most of the information will be pushed to the left of the display. If the image is very light or overexposed, the graphic information will be pushed to the right. If most of the information in the form of the graphic display is in the middle, then most probably you have a balanced exposure. We cannot effectively use the tools located just below the histogram, in particular the *Basic* options, until we understand how the histogram changes as we navigate the tools.

Beneath the histogram are a number of features that allow you to change how the image appears in Camera Raw. Everything you do can be undone. The changes you make to your pictures are scripted out so that the changes only take place permanently when they are exported either directly to your desktop or into Photoshop. You can always go back to your Raw file. From left to right are the following options: Basic; Tone Curve; Detail; HSL (hue, saturation, and luminance) / Grayscale; Split Toning; Lens Corrections; Effects; Camera Calibration; Presets; and Snapshots. Some of these features are far more important than others. Where to begin?

Start With Lens Corrections

Most people recommend starting in the *Basics*, where the exposure, value and the dynamic range of your digital image are primarily controlled, however, it is better to start with *Lens Corrections*, because this application may slightly lighten the image. That way you will not start with *Basics* and then have to return there after moving on to *Lens Corrections*. All you need to do is check the boxes that *enable lens corrections*, and *remove chromatic aberration*. The data stored with the file will interact with Camera Raw to minimize any distortions. You can also use the slider options to manually increase distortions, however, this is seldom needed.

Basics

In *Basics*, from top to bottom you will see the following options: White Balance; Temperature; Tint; Exposure; Contrast; Highlights; Shadows; Whites; Blacks; Clarity; Vibrance; and Saturation. There is an *Auto* option that will move most or all of these at once without you needing to think or make decisions, but it seldom does a good job and is not recommended. Which one you *manually* use first depends on how balanced or unbalanced your histogram appears. If the histogram is largely leaning in graphic information to the left or right you would probably first adjust the *Exposure* slider. If the image is a bit dark, move the *Exposure* slider to the right. If it appears too light, move the slider to the left. Watch the histogram change as you move the slider. If the exposure looks balanced from the beginning, then leave the slider alone. If you decide to change the exposure, and you want to know when you are going to far, in the sense of loosing detail in the shadows and highlights, then you can click on the "Shadow Clipping Warning (U)", and "Highlight Clipping Warning (O)." These are located in the upper left and upper right corners of the histogram box, respectively. When the Shadow Clipping Warning is activated, pure black in your image will be represented as cobalt blue. When the Highlight Clipping Warning is activated, pure white will be represented as bright red. In general, you should avoid these extremes, however, it depends on the picture. Obviously, for a night shot you are going to see a lot of blue if the Shadow Clipping Warning is activated. Just understand that there is no detail whatsoever in those areas where the blue and red appear. If you are okay with that, then proceed.

Although you might be tempted to work with the color temperature right away, it would probably be easier and more efficacious to work with the *Exposure*, *Whites*, *Highlights*, *Blacks*, *Shadows*, and *Contrast* sliders first, and probably in that order. Let's look at what each one does. As already explained, start with *Exposure* because that will generally darken and lighten the whole image. Next, set your *Whites*. By moving the slider to the right it will increase the amount of pure white in the image, stretching your histogram to the right. The opposite will occur if you move the slider to the left. Make sure you are not destroying your highlight detail by first activating the *Highlight Clipping Warning*. In any event, if there appears to be not enough detail in the lighter areas of your image, then move the *Highlights* slider to the left. If there is too much detail in the lighter areas, move the slider to the right. Next, set your *Blacks*. You can tell if there is no black in your image if there is some space in your histogram between the far left edge and the graphic display. If so, move the slider to the left and the histogram will be stretched to include a pure black. Be careful not to go too far. You can check this by activating the *Shadow Clipping Warning*. If it looks like there isn't enough detail in the dark areas of your picture, then move the *Shadows* slider to the right. If there appears to be too much detail, move it to the left. Truth be told, it doesn't really matter whether your start with the *Whites* and the *Highlights*, or the *Blacks* and the *Shadows*, or for that matter the *Blacks* / *Whites* and then the *Shadows* / *Highlights*, so long as you understand what moving the sliders is doing to the overall histogram and how that affects the image. Move them with mindfulness and understanding, not mindlessly. Generally speaking, it is best to wait until you have adjusted these sliders to use the *Contrast* option. By having made the changes to the *Whites*, *Highlights*, *Blacks*, and *Shadows* you will have already altered the contrast, sometimes considerably. You can increase or decrease the dynamic range of the values in your image by moving the *Contrast* slider to the right and left, respectively. Increasing the contrast basically makes the highlights brighter and the shadows darker, and decreasing the contrast does the opposite. Be aware that by using the Contrast slider, the sliders you have already worked with may change, and you may need to go back to do refinements. You have to adapt the extent of the changes you make for each individual image. For example, if you have a picture taken in the fog, and you want it to look like fog, you must be careful to leave some

space between the whitest point and the right edge of your histogram. However, for most pictures you will want to see information across the entire area that constitutes your histogram from left to right.

Any time you want to reset a slider, simply double click on the slider and it will return to its default position. This all sounds somewhat complicated, but you do get instantaneous feedback as the image changes, and it can be demonstrated by a teacher in a matter of one or two minutes. In Photoshop *Levels* and *Curves* will take the place of all the sliders thus far discussed in Camera Raw.

In the *Basics* window you can also alter color. At the very top is the White Balance drop down menu. Most of the time the camera's auto white balance will do a good job, but sometimes you may set it for a specific type of light, like tungsten or daylight and then forget to set it back to auto. In this case you can easily fix this error by picking one of the options from the menu which are top to bottom: As Shot; Auto; Daylight; Cloudy; Shade; Tungsten; Flourescent; Flash; and Custom. You can easily go back and forth through the various options to see if the image is improved. The Temperature slider below this is even more subtle and effective in changing the color temperature. Color is measured in degrees of Kelvin. A high Kelvin temperature is more blue, such as daylight, which is 5600 degrees Kelvin. Indoor light tends to be much yellower and warmer, such as tungsten lights which are generally either 3200 or 3400 degrees Kelvin. Fluorescent light is very green, and so forth. Simply by moving this slider you can do much more than with any other tool to change the color, either subtly or dramatically. Since you are doing it in *Camera Raw* it is also completely nondestructive. The next slider down is for changing the *Tint*. It is rarely needed or desirable, except to give a sense of mood to images that are nearly monochromatic.

On the bottom of the *Basics* panel you will see the *Clarity*, *Vibrance*, and *Saturation* sliders. The *Clarity* slider adds contrast to the mid-tones of your image, thereby creating the illusion of added sharpness. Adding too much will create an undesirable dark halo around edges within your image, but used carefully it offers the possibility of subtly increased or decreased tonal separation in the mid-tones, which is a relatively new feature for digital processing. The *Vibrance* slider increases the saturation of the colors in your image that are not already saturated. In other words, it will to some extent, but not entirely, bypass adding saturation to the colors that are already very saturated, and at the same time it will avoid changing flesh tones. This is a very nice feature for adding a bit of punch to an image, as they say, without making it obvious. The *Saturation* slider is probably one of the most overused sliders in Camera Raw. It is very tempting to make a dull image appear more cheerful, but the overall effect is somewhat fake. It should be used gingerly with a delicate hand. It is important to understand that color relates to emotion, and that changing the color of your photograph will also alter its emotional impact. If the Saturation slider is moved all the way to the left it will turn your photograph into a black and white image, but this is not the best way to accomplish that goal. It is better to use the *Grayscale* panel in *Camera Raw*, or the *Black and White* or *Channel Mixer Adjustment Layers* in *Photoshop*. These offer much more control over how the values in the black and white image are distributed.

Tone Curve

The next panel to the right of *Basics* is the *Tone Curve*. It operates very similar to *Curves* in *Adobe Photoshop*. This feature allows a more dramatic increase or decrease in contrast than the *Contrast* slider in *Basics*. There are two ways of using this feature: *Parametric* and *Point*. If you click on *Parametric* you will see a compressed histogram within a square with a diagonal line running through it from bottom-left to top-right. Below that are four sliders from top to bottom: *Highlights/ Lights/ Darks/ Shadows*. Each one of these sliders facilitates lightening or darkening that particular section of the histogram. For example,

if you move Lights to the right, it will lighten the values that are already the 50-75% lightest in your image. If you move that slider to the left, those values will darken. It works just like the *Contrast* slider in *Basics*, except that you can work on these four value zones of the image independently. As you move the sliders you will see the diagonal line change shape. For example, if you lighten the *Highlights* and darken the *Shadows*, thereby increasing the overall contrast, the diagonal line will turn into an S curve. Conversely, if you darken the *Highlights* and lighten the *Shadows* the contrast will be reduced and the diagonal line will appear as an inverted S curve. Once you have understood this, you can move on to the *Point* option. In fact, if you understand how the shape of the diagonal line effects the dynamic range of values in the image, you can start directly with the *Point* option. This feature allows you to click anywhere on the diagonal line, and as you move that point up and down it will lighten and darken, respectively, those precise values within the curve. If you change your mind, you can simply move it again, or delete the point. You can pick several points along the diagonal line to make very subtle changes, however, it is important that there be a smooth transition of the curve from one point to the next. An abrupt transition will create an unnatural looking special effect known as *posterization*.

Detail Panel

To the right of the *Tone Curve* panel is the *Detail* panel, which controls *Sharpening* and *Noise Reduction*. From top to bottom are the following sliders for the *Sharpening* feature: *Amount*; *Radius*; *Detail*; *Masking*. The *Amount* slider controls the contrast added to anywhere in the image where an edges appears. It will make one side of the edge lighter and the other side darker, thereby increasing the contrast, creating the illusion of increased sharpness. If you add too much, a mezzotint[2] texture will be added to the entire image. The *Radius* slider controls how many pixels are affected by the added contrast to the edge. You might say it radiates out from the edge. Adding to large a radius will create unwanted halos around the sharp edges. The *Detail* slider will increase sharpening in all of the image whether it finds an edge or not. If you are modest with the Detail slider and don't move it too much to the right, it will only affect the high contrast areas of the image and leave low contrast zones, like the sky, relatively unaffected. If you hold down the option key while you move the *Detail* slider you will get a grayscale preview of which parts of your image are being sharpened and which parts are remaining unaffected. Conversely, the *Masking* slider will suppress sharpening those areas that have less contrast. Holding down the option key gives you a preview just as it did for the *Detail* slider, although it looks very different. So how do you know how much overall sharpening and so forth to apply for your image? Well, it depends on the image. A photograph with a lot of detail such as a landscape with not much sky in the composition might benefit from increased overall sharpness using the *Detail* slider, whereas a portrait captured in shallow depth of field could suffer from the same treatment. This is when the *Masking* slider comes in handy. Fortunately, the sharpening in Camera Raw is non-destructive, so if you over or underdo it, you can return to your default position. It should be used sparingly. However, if you did not focus properly in the capture process, some sharpening will help.

One should zoom in to 100% or more when applying the sharpening features. The Amount slider will be defaulted to the number 25 for Raw files and o for jpeg files. The latter were already sharpened when the camera compressed them, and so further sharpening might be overkill. So bear in mind the default is already adding sharpening. Contrary to popular opinion, most of the time it is not necessary to add additional sharpening beyond the default 25. However, members of the "cult of sharpness"[3] would disagree. Of course, if your intention is to make a print way larger than the original file's capacity, some sharpening will be necessary. There is an ongoing debate as to whether it is better to do so in *Camera Raw* or in *Photoshop*.

Noise Reduction is coupled with *Sharpening* in the *Detail* Panel. First we need to establish what digital noise is. Basically, it is *artifacting* and splotchy areas in your image, particularly in the darker shadowy areas. It looks sort of like bad reception on a television set, except it is static. The best way to deal with digital noise is to not have any. This entails understanding what causes it, which is using a high ISO (400 or higher for most cameras), working in low light, and using a small sensor or inexpensive digital camera. Combined together, these factors are a recipe for what is sometimes called *Christmas tree artifacting*. Under *Noise Reduction* there are six sliders from top to bottom: *Luminance*; *Luminance Detail*; *Luminance Contrast*; *Color*; *Color Detail*, and *Color Smoothness*. First zoom in to at least 100% to a shadowy area of your image that displays noise. Start with the *Color* slider. The default for Camera Raw will already have added quite a bit of noise reduction. It will be set to 25 instead of 0. As you move it to the right you will see a lot more of the artifacting disappear. Keep moving the slider to the right until the artifacting disappears. You may still see some splotchyness. Move the bottom slider *Color Smoothness* to remove this splotchyness. If you go too far, you will notice that the brighter colors in your image will become duller. To recover that color, back off a little on the *Color Smoothness* slider and move the *Color Detail* slider to the right a bit. You need to keep negotiating these three sliders to find the best compromise for any given image. There will be considerable improvement. Next move on to the *Luminance* slider. As you move it to the right the noise will disappear, but so will the detail, so use this slider cautiously. The *Luminance Detail* slider will help recover some of the lost detail. Still, some areas in your image that had very little detail to begin with may still appear completely smoothed out. Moving the *Luminance Contrast* slider to the right will help simulate the illusion of detail in those areas by adding some texture in the completely undetailed areas.

It bears repeating that things like sharpening in Camera Raw or Photoshop can be avoided by slowing down and focusing mindfully, just as noise reduction can be skipped entirely if you shoot with a low ISO, on a tripod if necessary, with a reasonably good digital camera. Avoid needing to fix your pictures.

HSL / Grayscale

The next panel to the right of *Detail* and *Noise* Reduction is *HSL / Grayscale*. *HSL* stands for hue, saturation, and luminance, all of which must be manipulated separately. Clicking on the *Convert to Grayscale* box shows you instantaneously what your picture looks like in black and white. All of these features work very well with the *Targeted Adjustment Tool* (T) to make subtle and sweeping changes to your image.

Let's start with hue, which relates very much to the mood generated by your photograph. If you just want to change the hue of the sky, for example, you can click on the *Targeted Adjustment Tool* or use keyboard command T, place the tool somewhere in the area of the sky, hold down the option key and drag your mouse or keypad up and down. As you do so the hue of the sky will change to a different color. It will also affect anything else in the picture that is the same color blue as the area of the sky that you targeted.

The next tab to the right is *Saturation*. It works similarly to saturation in the *Basics* panel, except that it only affects a specific color you choose, rather than all the colors. The *Targeted Adjustment Tool* works in the same way as it does for hue, this time allowing you to saturate or desaturate a specific color in your image. If you increase the intensity of the yellow of a dog's fur, for example, it will also increase anything else yellow in the picture.

The last tab for *HSL* is *Luminance*, which is sort of a confusing name for this feature, because it has nothing to do with the luminance that we already

discussed when analyzing noise reduction. Rather, *Luminance* in this context functions more like the *Exposure* slider in *Basics*, except that it focuses on individual colors, or a specific color when used in tandem with the *Targeted Adjustment Tool*. As you hold down the option key and drag the mouse or keypad up and down a specific color will get lighter and darker.

What might first appear to be a big problem with HSL is that you might not want to change the hue, saturation, or luminance for everything in the picture that is yellow, or everything that is green, for example. You might just want to alter the green grass, but not the green pickup truck parked in front of it. This is called a *local adjustment*. One option for a situation like this is to use the *Adjustment Brush* (K) instead of the *Targeted Adjustment Tool*. When you click on the *Adjustment Brush* tool the appearance of the panel will change to all the options possible with the brush. With the *Adjustment Brush* you can paint in the parts that you want to be altered, making them more saturated, less saturated, lighter or darker, etc. The brackets keys on the keyboard are a fast and easy way to make the brush larger and smaller. The right bracket makes the brush bigger and the left bracket makes it smaller. The *feather* or softness of the edge of the brush determines how many pixels are affected. It can be swiftly increased or decreased simply by holding down the shift key while moving the right bracket to increase the feather, or the shift together with the left bracket to make it smaller. Be sure to start with holding down the shift key rather than the brackets. The *Density* slider also gives the option to change the opacity of the brush, giving it a lighter touch. Keep the *Flow* slider set fairly low, so you can effect changes gradually with multiple passes, rather than overdoing it abruptly. You can also use the Adjustment Brush to erase changes rather than add changes. It is quite flexible, although not as much as similar tools in *Photoshop*. For example, you can use the *Adjustment Brush* to dodge and burn, however in *Photoshop* the method is a lot more straightforward. Another option is to wait until you bring the image into *Photoshop,* use a *Selective Color Adjustment Layer* to make the changes and apply a mask to erase those areas you don't want affected. There are many ways to accomplish similar ends in digital processing.

The *Convert to Grayscale* option is probably the best way to make a digital file black and white, for two reasons. Firstly, because it happens very early in the process in a nondestructive manner, and secondly because it allows you to use the *Targeted Adjustment Tool* to make any gray zone in your image become lighter or darker. For example, if you want to darken or lighten a blue sky, you can make it white, black, or anywhere in-between on the tonal scale of grays between black and white. It will only affect the blue areas targeted If at any time you want to return to working in color, you simply unclick the *Convert to Grayscale* box. There are two other nondestructive ways of converting a color image into black and white in Photoshop, the *Black and White Adjustment Layer* and the *Channel Mixer Adjustment Layer*. These will be addressed at greater length later. They offer the possibility of going back and forth from color and black and white without having to return to the Raw file.

If you decide to change your image to Grayscale, the next panel, *Split Toning*, allows you to simulate darkroom toning techniques.[4]In *Camera Raw* we use the *Split Toning* panel, allowing the ability to change the hue and saturation of the highlights and shadows of our image separately, and then balance them to emphasize one or the other. You can also only work with the highlights, or only work with the shadows. It is very flexible. However, to be honest, it is very easy to wander very swiftly into making images look very cheesy and decorative with this technique. It is not a new problem for photographers. In 1942, when the first edition of Edward Weston's richly illustrated *Leaves of Grass* by Walt Whitman was published, all the images were printed on pale green matt paper, much to his horror.

More Lens Corrections

The panel to the right of *HSL / Grayscale* is *Lens Corrections*, which has already been recommended as the first point of departure for working in *Camera Raw*. In case you forgot to start off with this panel, no worries, simply click on the "*Remove Chromatic Aberration*," and "*Enable Lens Profile*" boxes. You will see subtle changes, like a bent horizon becoming straight. The image will sometimes lighten ever so slightly. If need be, return to the *Basics* panel to correct this. This panel also offers incredible opportunities for perspective correction when used together with the *Transform Tool* (Shift-T). When you click on the *Transform Tool* the *Lens Corrections* panel will change to a *Transform* panel. The options for perspective correction are a lot more straightforward and easy to use than those in *Photoshop*. It is a good idea to take care of any perspective correction one wishes to nondestructively apply at this early stage in the process. Towards the top of the panel you will see *Upright* with six graphic links below. To the left is a circle with a diagonal slash, which stands for *Disable Upright*. This is basically a convenient way to undo any changes you might make with the other *Upright* options. The next option to the right is "*A*" which stands for "*Auto: Apply Balanced Perspective Corrections*." Essentially, when you press that "A" *Camera Raw* will second guess how much to change the vertical and horizontal lines to create a balanced look. Please be aware that the lines will not be 100% perpendicular. The next option to the right looks somewhat like a window with a horizontal line going through the rectangle. It represents "*Level: Apply only level correction*." It will more or less straighten horizontal lines in relation to the frame of your image, but leave the vertical lines relatively unaltered. The next option to the right appears as another graphic window-like symbol, however, this time with vertical lines. As you may have already guessed, activating this feature, known as "*Vertical*," will apply vertical perspective corrections. Then comes the next option to the right, a window with both horizontal and vertical lines, called "*Full*" which will "apply level, horizontal and vertical perspective corrections."

The last tool on the right is the only un-automated option and not surprisingly works the best. This is called "*Guided*," and requires you to "draw two or more guides to customize perspective correction." You simply place the cursor along the top of a line and drag it along to the bottom of that line and click again. It is best to ask the teacher to quickly demonstrate this. These guides will straighten the lines you chose to be parallel with each other as well as the vertical and/or horizontal borders of the frame of the image. It is just too easy. Prior to the availability of these fast tools, the only way to effectively apply perspective correction was to use the movements of a view camera. These movements are called: rise and fall, shift, swing, and tilt. Very few people alive today understand these movements with confidence. They are all done at the time of capture, rather than at a later processing stage. Although the results look very similar, analog and digital really do operate very differently when it comes to perspective correction. The digital photographer can use these tools with intentionality if they make the decision to apply them later at the time of capture. If that is the case, they would do well to frame a loose composition, as the perspective correction in Camera Raw will cut off part of the composition, whereas this is not the case with film photography. Why bother? I guess the short answer is — elegance. It is not a coincidence that still life, architecture and landscape photographers use these tools habitually.

The bottom of the *Transform* panel offers a number a additional adjustments that can help tidy up the composition a bit after having used the previous corrections. The grid overlay is useful to double-check if everything is rotated and lined up as you wish.

Effects

The next panel to the right is *Effects*, which includes *Dehaze*, *Grain*, and *Post-Crop Vignetting*. Dehaze can be used to either simulate the illusion of haze, or to remove recorded haze. What is haze? One could say that it is a diminishing of clarity particularly apparent in the far distance of a landscape. In fact,

Renaissance painters deliberately introduced haze into their compositions to create the illusion of distance. Photography shares the same geometric perspective of painting from that era, so it is somewhat disconcerting to see photographers taking it for granted that haze is something that needs to be eliminated. That being said, some days are hazier than others, and so sometimes de-hazing a photograph can be visually likened to drinking a strong cup of coffee. Simply move the slider until you find the desired look.

Grain is a quality of film. In fact, you could say that film is literally made up of silver grains. These appear very organic, and unlike pixels, they enlarge with dignity. In analog photography excessive grain is caused by shooting with a high speed film, overexposure, overdevelopment, and choice of film developer. Some people like the tough looking quality of grain, particularly street photographers who shoot hand-held small format cameras with traditional grain films with high acutance[5], such as Kodak Tri-X and Ilford HP-5. The kind of film an analog photographer uses is a big aesthetic choice. For the digital photographer the addition of grain is pure mimicry. Whereas traditional street photography is generally concerned with issues of documentary authenticity, to simply reproduce the look of that with an added effect misses the point entirely. Nevertheless, if you want to trick your audience into thinking that you shot your picture on film, the addition of fake grain is the way to do it. You can manipulate the amount, size, and roughness with a slider for each.

For some odd reason the *Post-Crop Vignetting* feature was also added to this panel, perhaps because it also mimics darkroom techniques. It is called post-crop because you always want to make sure you have cropped your composition to where you want it to be before adding a vignette, which will make all four corners either darker or lighter. In Camera Raw its easy — simply move the slider. The technique originated, however, in the traditional analog darkroom. For example, one often had to burn-in the corners of one's projected image because most condenser enlargers have a hot spot in the middle. Burning-in the corners evens out the projection. Also, some photographers, like Max Yavno, would habitually burn-in the corners of almost all of their prints excessively for the dual reason of leading the eye to the middle of the image, and also as a stylistic device. Lightening the edges of the image by making a reverse vignette was used by studio photographers to isolate their head shots in a kind of floating fluffy cloud of whiteness. It was used rather a lot in the 1950's and 1960's. Nowadays we see white vignettes often as postcards of landscapes and tourist attractions. In addition to Camera Raw there are a lot of techniques in Photoshop to graphically manipulate your images in this way. However, most of the time you can skip this panel.

Camera Calibration

The next panel to the right is called *Camera Calibration*. The options in this panel may vary a bit depending on what kind of camera you shot with. *Camera Raw* should be able to detect what kind of camera and lens you shot with. If you shot with a Fuji camera, for example, the Camera Profiles will give you the option to see how the color of your file would have been different had you shot with one of their films, such as Provia, Velvia, and Astia. Unfortunately, the drop-down menu of films does not include any of the wonderful discontinued transparency films that were once available from Kodak or Agfa. Sometimes you might prefer the look of Provia, for example, or simply use this feature to try and match the color in a series that was shot partly on film and partly shot digitally. This panel also gives you the opportunity to work with the red, green, and blue primary channels individually. You have two sliders each for controlling hue and saturation, allowing you to tweak the color of your image in a way that would not have been possible using the *Color Temperature* feature in the *Basics* Panel. It is unlikely you will need to use this panel of *Camera Raw* very much.

Presets

The next panel to the right is *Presents*, which allows you to make several changes to a file and save those changes. With a click, you can then apply those changes to any number of files that you have opened in *Camera Raw*. This can save a lot of time if you know in advance that a whole folder of RAW images shot in identical conditions will need the same cooking in *Camera Raw*.

Snapshots

The last panel on the far right is called *Snapshots*. This is a very convenient way to try out different possibilities for a single image and save the various versions. For example, you could make one in black and white and another in color, and perhaps another version with some dramatic changes. You can give a different name to each *snapshot* and simply go back and forth between the various versions by clicking on that name. It would then be possible to export any of the options without the need to duplicate your file.

White Balance Tool

There is one more tool in to the toolbar located above the image that can be useful now and then to make further modifications to our digital photograph. The *White Balance* tool, which looks like an eye dropper is a convenient way to remove an unwanted color cast. Simply hold it over an area in the picture that you believe to be, or would like to see rendered as neutral gray. The overall color temperature of the image will shift. You can observe this directly by checking the Color *Temperature* slider in the *Basics* panel.

There are more tools and tricks in *Camera Raw* that are helpful for fixing images. Without going into the infinite details, let it suffice to say that these repairs are better dealt with in *Adobe Photoshop*, which offers more control. Better yet, the mindful photographer, having been more careful at the time of capture will have no need to overwork and wrestle with their inadequate images. Rather, if you slow down, wait for the light to be appropriate, and considered your choices with awareness and knowledge, *Camera Raw* will be a breeze and *Photoshop* will only require a few final refinements.

Selecting Color Space and Saving

Before clicking on the Open Image button that brings your file directly into Photoshop, you will need to set the color space, bit size, and image size. Click on the underlined link below the image. A dialogue box will open up. Under *Color Space* you will see several options from top to bottom:

Adobe RGB 1998
ColorMatch RGB
ProPhoto RGB
sRGB IEC61966-2.1 (sRGB)

For most purposes you only need to be concerned with the top and bottom choices. If your intention is to make a quality print on a good inkjet printer, then it is best to use Adobe RGB 1998 because it gives you many more colors and a more pleasing result. If you intend to upload your image to the internet, send it as an e-mail, or make one-hour machine prints at the local drug store, then it is recommended to use sRGB, which is a much smaller color space. If your image is going to be published or printed at a professional lab, then you should definitely inquire what color space these establishments require. *Camera Raw* is the best place to make these changes non-destructively. Set the Bit Depth to 16. This will give you more options allowing subtler refinements in *Photoshop*. However, JPEG files will automatically default at 8 Bit Depth and you won't have that option. Also, if you know that you are going to directly print without further modifications in *Photoshop*, then it doesn't matter whether you set the Depth to 8 or 16 bits. As for setting the image size there is an ongoing debate as to whether it is better to enlarge your image at this stage or later in *Photoshop*. Generally speaking the industry standard for inkjet prints is to use a resolution of 300 and the default for however many megapixels your camera provided. Any

enlargement beyond that will generally require further sharpening in *Photoshop*.

The *Save Image* button on the bottom-left corner of *Camera Raw* is a way to save one or many images in various formats to your desktop. The same image can be saved as a TIFF in Adobe RGB 1998 color space or as a JPEG is sRGB. Until you either open or save your images in RAW they will not actually be reconfigured according to the script you have written out through all the changes you made in *Camera Raw*.

If after having worked in *Camera Raw* you don't want to save any of the changes you made, simply click on the *Cancel* button and you will return to *Adobe Bridge*.

1 An unflattened file means it has no adjustment layers.

2 A printmaking technique.

3 A humorous epithet the author once heart James Welling utter.

4 Tone needs to be distinguished from value. Tone is the color of the black, and the color of the base of the paper. So a warm tone print, for example, will be more yellow, while a cold tone print will be more blue. An untoned traditional silver gelatin print made in the darkroom will be much greener than the same print selenium toned, which will look somewhat eggplant purple-black in color. In contradistinction the value of a print is how light or dark it is. This is sometimes called print density or brightness when referring to computer monitors, for example. The chemicals used in the darkroom, for sepia toning, selenium toning, and gold toning in addition to altering the tone, also greatly enhance the archival longevity of your prints. There is always a tradeoff, this time exchanging the archival quality of a fine silver gelatin print, for not needing to expose yourself to nasty chemicals. In the darkroom split toning is accomplished by submerging a print made with variable contrast paper for up to twenty minutes in a toner. The highlights and shadows will tone at a different speed, thereby creating a split in tone. The photographer Linda Butler is especially good at this.

5 Acutance is a term referring to the size, shape, and sharpness of grain in a film. There are two general types: traditional, which is large, round and sharp; and tabular, which is small, disc-shaped, and less sharp.

Further Refinements in Adobe Photoshop

As stated earlier, this book focuses primarily on the features in Photoshop that are designed for photographers. Furthermore, only nondestructive avenues of digital processing will be examined with a particular emphasis on digital darkroom equivalents.

Opening a File

To open a file in Adobe *Photoshop* there are a number of options. From *Camera Raw* click on *Open Image* and your picture will open directly in *Photoshop*. If you already have *Adobe Bridge* open, and you do not wish to make further changes in *Camera Raw*, simply double-click on the thumbnail of your image in Bridge and the file will open directly into *Photoshop*. If do not wish to use *Bridge*, simply drag your file, wherever it may be on your computer to the *Photoshop* icon in your dock and it will open straight away. Otherwise, you can also open *Photoshop* by going to File / Open, and locate the file of your choice anywhere on your computer, memory card or external hard drive. If you are working with anything other than a PSD or TIFF file immediately after opening the file is the time to save it in one of these two formats. Go to File / Save As to proceed.

Reviewing Your Choices

Now that your file is open in *Photoshop* you need to make a number of choices that are not very different from the choices an analog photographer makes when he or she looks at his or her wet proof print in the darkroom. These are: decide if you like the picture; decide if it is sharp; decide the correct value; decide the correct contrast; decide whether or not to dodge and burn. The big difference, however, is that if you have done your homework you will already have made most or all of these decisions in *Camera Raw*, and now you simply need to re-evaluate those decisions, albeit in a different sequence. If you skipped over *Camera Raw* you will need to make more sweeping changes to your file.

If you don't like the picture, don't waste time trying to convince yourself it is better than it really is, but rather move on to an image that merits your precious time. However, it might first be good to take a moment or two to think about why you are not satisfied with it, and what steps you might take next time you go out taking pictures to avoid the mistakes you made this time.

Checking Sharpness

To check how sharp a picture is simply click on the 100% box directly above the image, or use the magnifying zoom to enlarge your picture up to 200%. In time you will build up the experience to evaluate whether or not any additional sharpening is needed. Wait until you have made the rest of the adjustments before implementing this task.

Levels

In the traditional wet darkroom, you will make the decision regarding value, the prints overall lightness and darkness, before considering contrast. In Photoshop the digital photographer will start by adding a *Levels Adjustment Layer*. There are three ways to do this: 1. click on the Levels icon in the adjustments window; 2. click on the black and white circle in the bottom-right corner and select *Levels* from the menu; 3. On the top menu bar go to *Layer* / *New Adjustment Layer* / *Levels*. All three methods will open a window displaying your histogram with three triangles pointing upwards, left, right, and center along the bottom of the histogram. To change the overall value (lightness / darkness) of your image, simply move the center triangle to the right to darken and to the left to lighten. The triangle on the bottom right can then be moved to make sure you have a white in your image. Moving it to the left will increase the whiteness, eventually clipping highlight detail if you go to far. Similarly, moving the left triangle to the right is a method to make sure that you have a black in your image. Be careful not to go

to far, thereby reducing shadow detail. As you move both the left and right triangle closer to the middle triangle, the contrast of the image will be affected. It is recommended to only move them minimally to ensure a black and near-white point, and then do the fine-tuning regarding contrast in *Curves*, if necessary.

Remember, just as the analog photographer is trying to make a print with a pure white with rich highlight detail, a pure black with full shadow detail, and a full range of grays in-between, the digital photographer is also trying to maximize detail and execute the commands necessary to accomplish a full tonal range. Most of this happens in *Camera Raw*, or else in *Levels* and *Curves* with *Photoshop*.

Curves

Next, open the *Curves Adjustment Layer*. To do this follow the same methods just given for *Levels*. This time the icon in the adjustments window will be just to the right of the *Levels* icon. The *Curves* adjustment will appear similar to the way it did in *Camera Raw*, however, there are a couple key differences. Firstly, there are two upward-pointing triangles on the far left and far right bottom edge of the *Curves* window displaying the compressed histogram. The darkened triangle on the left allows you to set the black point, just as you did in *Levels*. The white triangle on the right allows you to set the white point, just as you did in *Levels*. So, if you have already set these in *Levels*, you can leave them alone, however, if you skipped *Levels*, you can achieve the same result here in *Curves*. The reason there is no middle triangle, like there is in *Levels*, is because you can accomplish a subtler refinement of your image simply by choosing a point anywhere along the diagonal line and by moving it upward the value in the image represented by that area will get lighter. By moving the point downward, the value will get darker. In fact, you can choose several points along the diagonal line and make some of them lighter and some of them darker. For example, as mentioned in the *Camera Raw* section of this manual, if you raise a point lightening the highlights and lower a point darkening the shadows, you will increase the contrast of your image and still retain control of the highlight and shadow detail. This appears as an "S" curve. Doing the opposite, lowering the highlight point and raising the shadow point will create an inverted "S" curve, thereby lowering the contrast. This is a far more effective and satisfying way of manipulating contrast than you could ever hope to do in *Levels*. A good workflow would be to establish the white and black point and general mid-tone value using *Levels* first, and then do the subtle contrast work in *Curves* thereafter. However, once you become really adept at *Curves*, you can skip *Levels* entirely and process both value and contrast using this single tool. Stay away from the *Brightness / Contrast Adjustment Layer*. This offers very few options and is really only meant for use by people who have not taken the time to learn *Levels* and *Curves*.

Dodge and Burn

The analog photographer with darkroom experience will recall that after having found the value and contrast that best suits printing a particular negative they will very often need to dodge and burn. Dodging blocks light and makes that area of the print that was blocked lighter, whereas burning adds light to make some areas of the print darker. It is a simple and straightforward process. The digital photographer also often needs to dodge and burn. There are many ways to do this, but probably the easiest non-destructive way is to first create a duplicate layer of your background. To do this go to *Layer / Duplicate Layer*. So as to remember later on what you did on this layer, rename it "dodge and burn." In the traditional wet darkroom, we begin with dodging during the initial exposure and then add a second exposure for burning, however, in *Photoshop* you can start with either one. For the sake of consistency, let's start with dodging. In the tool bar click on the dodge tool, which looks like a dodging wand. You are mostly concerned with making the shadows a bit lighter in selected areas throughout your composition. Above the picture in Photoshop there is a drop down menu for Range from which

you can choose either shadows, mid-tones, or highlights. Pick shadows and make sure that the *exposure* setting, which is similar to the brush *flow* setting in *Camera Raw*, is set very low, such as 5%. This way you can use your brush in multiple passes to gradually lighten an area without overdoing it. As in *Camera Raw* you can use the brackets on your keyboard to quickly make the brush bigger and smaller. Paint in the areas you want to be lighter. If you go to far, go to the *History* window and backup. The burn tool looks like a hand forming an opening between the palms and thumb. When you are ready to burn in the areas of your photograph that appear to be too light, simply go to the drop down menu within the dodging wand tool and choose the burn tool instead. This time select *highlights* in the range and set your exposure once again to around 5%. Use the brush to darken down selected areas within your photograph in multiple passes. Since you made all the changes on a duplicate layer, rather on the background, you always have the option to throw it away and redo the dodging and burning without changing anything else in your image. As mentioned earlier, there are other ways in Photoshop to make selected areas of the image lighter and darker. These generally involve creating layer masks and using the paintbrush tool, and also the use gradients and vignettes. Such advanced methods are useful when an image needs a lot of repair work, but are considerably less straightforward than simply using the tools designed specifically for dodging and burning. It bears repeating that the mindful photographer avoids the need to make heavy repairs to their photographs through awareness and patience.

Sharpening

As with most anything else in *Photoshop*, there are many ways to sharpen an image. However, if the photographer is careful to focus properly prior to exposure then in all likelihood it will not be necessary to add any extra sharpness. Indeed, sometimes photographs are over-sharpened to the extent that they no longer look believable. Also, if there was some need to correct sloppy focusing, the best place within the digital workflow would be to take care of that in *Camera Raw* as previously described in this manual. However, sometimes when you want to make an image very very large, as is the fashion these days, it is necessary to add some sharpening.

The oldest method for sharpening, going back to the very beginnings of Photoshop is to use the *Unsharp Mask* filter. Start by making a duplicate layer of your background, just as you did for dodging and burning. This way, in case you overdo the sharpening you can throw away the layer and your background will not have been permanently changed upon saving the image. Next, zoom in on your file to around 100% and use the hand tool to position the image so that the main subject of the photo that you wish to sharpen is visible. Then go to *Filter* / *Sharpen* / *Unsharp Mask* and a dialogue box will appear. You will see a selected portion of the image. Position the part of the image you wish to see sharpened within this square. Below the image you will see three silders from top to bottom: *Amount*, *Radius*, and *Threshold*. The *Amount* slider determines how much contrast to add to the edges of the pixels. The *Radius* slider determines how many pixels are effected. The *Threshold* slider suppresses the amount of sharpening in areas of the picture that don't have a lot of edges, such as skin or the sky. As already explained in the *Camera Raw* section of this manual, the subject matter of each individual photograph will require different strategies for how to negotiate these three sliders. You can check the preview button on and off to see the changes, and when you are satisfied with your choices click *OK* to complete the sharpening.

Another excellent non-destructive method for sharpening is to make a duplicate layer of your background, just as was described for dodging and burning, and then rename the layer *high pass*. Then go to *Filter* / *Other* / *High Pass*. You will see a neutral gray square. As you change the size of the radius, a magnified square of an area within your image will begin to appear, highlighting what will

be sharpened. The software will look for edges and increase the contrast of the pixels. Basically what is happening here is that the High Pass is searching for edges and then darkening one side of the edge and lighting the other side, thereby increasing the contrast of the pixels. This creates the illusion of sharpness. Click on *OK*, and you will see that the entire image now appears mostly gray with some fine lines weaving through it. Go to the blending mode within your adjustment layers. Most of the time you will pick the *Soft Light* blending mode, but if you want a somewhat harder look use *Overlay*, and for still harder choose *Hard Light*. You can click the eye on and off next to the high pass layer you created to check if the degree of sharpness was adequate, just right, or too much. If you find there are some areas in the image that you would have preferred to not have sharpened, you can create a layer mask and use the paintbrush and eraser tools to work with those areas, but generally this is not needed.

Smart Objects

An alternative to duplicating the background layer so as to enable yourself to work non-destructively is to change your background layer into a *Smart Object*. There are several ways to do this, but for the sake of brevity, simply go to *Layer* / *Smart Objects* / *Convert to Smart Object*. Then you can use the High Pass filter or the *Unsharp Mask* filter to do the same thing you did before. A lot of people avoid using *Smart Objects* because it can be a little confusing knowing where to click to make the revisions that *Smart Objects* allow you to make, so let's unpack those now. For making changes to the *High Pass* double-click on the icon on the bottom-right of the high pass within your smart object. The high pass menu will reappear again allowing you to set the mode. If you wish to increase or decrease the radius of the *High Pass*, you can do this by double-clicking on the words *High Pass*, within the *Smart Object Filter*, which will make the dialogue box reappear allowing you to make changes to the radius. If at the end of the process, perhaps after making a print you decide you don't want to add any sharpening after all, you can simply click on the eye icon and the sharpening will cease to appear. Smart Filters can also be dragged to the trash icon to be removed permanently. If you decide to use the *Unsharp Mask* filter instead of the *High Pass*, you can also start off by making it into a *Smart Object* and then proceed as usual. The difference is that you can always go back and change the degree of sharpening without starting over. All this happens nondestructively.

There are countless uses for *Smart Objects* in *Photoshop* that you should explore as the need arises. This brief explanation is meant only as an introduction. You can even open a RAW file in *Photoshop* directly as a *Smart Object* simply by clicking a box in the *Workflow Options* feature in *Camera Raw*. All this probably reads as a whirlwind vertigo of confusion, but a qualified teacher can show you any of these operations in a matter of a few minutes. After that these instructions will be invaluable in helping you remember what the teacher showed you.

Making Your Image Black and White in Photoshop

As already explained in this manual, it is recommended to convert your color file to grayscale using the *HSL / Grayscale* panel in *Camera Raw*. If for whatever reason you didn't do that, there are two very good ways to make your image black & white in Photoshop that are nondestructive. These two methods are the *Black and White Adjustment Layer* and the *Channel Mixer Adjustment Layer*.

The *Black and White Adjustment Layer* appears very similarly to the *Grayscale* panel in *Camera Raw*, but it has more options when it comes to simulating the look of colored filters used with black and white film. Using the Preset drop down window you can pick from among twelve different filters or create your own custom filter. A red filter, for example, will darken down anything cyan (the opposite of red in terms of light) and make any clouds in the sky pop out dramatically. You can quickly try out different possibilities to see if you like the results. This

adjustment layer also has a feature that is similar to the targeted adjustment tool in *Camera Raw*. Click on the icon just above the red slider. It looks like a hand with the index finger extended with two triangles pointing to the left and right on either side of the finger. Place the cursor anywhere on the image you wish to lighten and darken and then slide it left to darken and right to lighten. It will affect anything of that specific color within your image. It responds a bit more sluggish than the corresponding tool in *Camera Raw*, but it is nevertheless useful. You can move any of the sliders to the right and left to lighten and darken that particular color as it is translated into black and white. This can be handy when you have two colors that are nicely separated in a color photograph, yet because they are more or less the same value appear almost the same in black and white. For example, you could make one color lighter and the other darker and have a much more compelling image free of tonal mergers.

The *Channel Mixer Adjustment Layer* is particularly easy to use for veterans from the analog color darkroom who understand how light mixes. In many respects this is a preferred way to make your image black and white because instead of having so many confusing options you only have a few meaningful ones. Simply click on the *Monochrome* box and move the red, green, and blue sliders. In terms of how light mixes, it is helpful to understand that the opposite of red is cyan, the opposite of green is magenta, and the opposite of blue is yellow. Therefore, whenever you increase the amount of red, for example, you are automatically also decreasing the amount of cyan. Simply move the three sliders to change the translation of colors into black and white values in your image. Below the three sliders you will see a *total* of all the values, indicating how much you have reduced or increased the overall values within the image. This should be kept somewhere between 90 - 110 so as not to lose too much detail.

Alternatively, turn your background into a *Smart Object* and then go to *Image* / *Adjustments* / *Channel Mixer*, or *Image* / *Adjustments* / *Black and White*, and proceed as you did with the Adjustment Layers. The only real advantage to doing this is that it will reduce your file size.

Retouching

In analog photography retouching is called *spotting*. You take a barely wet, extremely thin brush and slowly build up the value to match the dust spots and scratches until they disappear. The hairs of the brush must be so fine as to match the grain. If you simply paint in an area with an overly wet brush and the ink too dark you will be unable to reverse the damage done to your print. It's all very straightforward, but requires a steady hand, concentration, good eyesight and patience.

Digital retouching also requires patience. There are methods that are quick and automatic, but they reduce the sharpness of your image and are not recommended. It is possible to retouch in *Camera Raw* or *Lightroom*, but the tools in *Photoshop* called the *Rubber Stamp* and the *Spot Healing Brush* are far superior. These two tools work in a very similar manner, however, there are some key differences that should be distinguished. The biggest difference is that the Rubber Stamp will clone the exact pixels from one part of the image onto another area, whereas the Spot Healing Brush recreates the general texture, value, color, etc. of the area surrounding the designated brush area to be retouched. So, for general purposes the Spot Healing Brush is the preferred method. However, when retouching an area with a sharp edge, like where a face ends and a background begins, for example, it would be better to use the Rubber Stamp. This requires that you first hold the cursor while holding down the option key over the spot you would like to reproduce from, and then move your mouse to the area you wish to clone. You only need to do this for the first click, and thereafter it will clone automatically. it is recommended to first create a new clear layer above your background so that the process is nondestructive and you can always return to your un-retouched file. As always, it

best to get a first hand demonstration from a qualified teacher.

You can watch online tutorials for hours on end to learn other complicated techniques, but these two tools are more than enough to get the job done. That is to say, to get rid of dust and scratches. Portrait retouching is a somewhat more complex matter that could fill an entire chapter. Although it is common to see overly retouched portraits nearly everywhere one looks these days, there was a time when some individuals frowned upon it. The great photographer Edward Weston, for example, had a sign on his oversized mailbox that read "Edward Weston, Photographer, Unretouched Portraits, Prints for Collectors." This doesn't mean he wouldn't spot a fleck of dust, but rather that he was uninterested in using photography as a means of deception. This attitude is in alignment with mindfulness.

Unless you are working from a scanned negative, which usually requires considerable retouching, you will only need to use these tools if your sensor has dust on it. This can be avoided by only changing lenses infrequently and in a relatively dust free situation.

Adobe Lightroom

For the serious photographer working digitally, Lightroom is the only viable alternative to Photoshop.[1] Lightroom and Camera Raw were created for photographers, whereas much of Photoshop was designed for graphic artists. Lightroom has almost all the same features as Bridge and Camera Raw combined, but it has additional capabilities, particularly the ability to make fine prints using the *Print* module, without the need to go through Photoshop.[2] Lightroom is a tool that helps to simplify and speed up your workflow, manage and organize, improve, and export in various ways the high quantity of digital images you accumulate over time. These various tasks are organized within Lightroom in modules. The *Library* module, for example, helps you organize. The *Develop* module includes many of the same tools as Camera Raw, including all of the important ones.[3] There is a curious module called *Map* that actually uses the GPS coordinates from your digital camera to help you locate on a map where your picture was taken.[4] The *Book* module offers a sophisticated way to produce digital print-on-demand books.[5] The *Web* module makes it easy to create galleries of your images that can be directly uploaded to the internet.[6] Lastly, the *Slideshow* module allows the photographer the option of outputting their images as a slideshow, and academics the option of using Lghtroom as an alternative to PowerPoint.[7] All in all, Lightroom is not intended to replace Photoshop, but rather to work with it.[8] Please see the notes for tips and details regarding these modules. Bridge and *Camera Raw* are replaced by Lightroom, so at some point you will have to decide which software workflow you find most comfortable to work in. This manual is intended to help you make that decision through examining the various advantages and disadvantages of the possible workflow options. It is important to get a first hand demonstration of Lightroom directly from an expert. Only then will the information that follows be an adequate support to navigate the unusually broad horizons of this software program.

When you begin using Lightroom it is recommended to go to Help / Library module and browse through the "tips" for acquainting yourself with each particular module. Lightroom is divided up by panels on the top, bottom, right, and left, with the picture in the middle of the work area. The panels can be resized or rendered invisible by closing them, and then re-opened when desired.

Helpful Keyboard Commands

Here are some hopefully helpful suggestions regarding keyboard commands (Mac):

To see an image bigger, press the tab key to hide the left and right modules. To minimize all the modules, top, bottom, right and left, press shift/tab. Press again to bring them back.

Use the arrow keys on your keyboard to see other images in the same folder.

If you want to see the image and nothing else, tap the "L" key. Tap it once to dim the background, twice to blacken the background, and a third time to return to normal viewing.

Use the "f" key for full screen mode.

If you wish to see more than one image at a time in the workspace you can do this by selecting however many thumbnails you wish, and then click on the "survey" icon, or use the "n" key.

When in the Develop module, you can see the before and after to the changes you have made using the \ (backslash) key.

To zoom in on an image use command+.

When retouching you have the option to press the "h" key to hide the overall graphics, which can be distracting.

Inside Lightroom

To move files, you simply click and drag on the folder. Lightroom will ask you if you really want to do this because it means that the folder will not only be moved in Lightroom, but also on your hard-drive. Control/click to rename the folder. You can also rename a file by first selecting the thumbnail and then going to Library / Rename Photo.

To import images into Lightroom you must be in the Library module. The easiest way to do this is to simply click on the Import button. You can also go to File / Import Photos and Video. You need to select a folder located anywhere on your hard-drive or on an external hard-drive, and then select which images you wish to add to your Lightroom Library. In the right column, it is recommended to use the setting *build previews* to *standard*. If you will be working from an external hard-drive check *build smart previews*, and also check the box *don't import suspected duplicates*. Then you are ready. These steps will not copy and move images into Lightroom, but rather build up a Library of thumbnails that connect to the images and allow you to work on them, in their own place. If you decide to import your images directly from your camera or CF memory card, Lightroom will first ask you where you want the images to live on or off your computer. Simply click on the gear icon to set the Import settings and select a destination. Then click Import as before, and select all or some of the images you wish to be imported. It is important to understand that the image is not duplicated. Lightroom is not capable of operating as a backup for your images. Rather, what it does is connect to your catalog of images. Even so, you will need to back up the thumbnails you import into Lightroom on a regular basis. Every time you close Lightroom you will get a message asking if you wish to do this. It only takes a moment or two. One of the main advantages of working in Lightroom instead of Bridge / Camera Raw, is that you can use *Smart Previews*, which allows you to work on an image that lives somewhere off your main computer when your hard drive is offline.

One serious issue to consider regarding the choice to use Lightroom vs. *Bridge / Camera Raw* is that when you make changes to your files outside of Lighroom, such as renaming or relocating them, they then become problematic to find, although there is a way to search for the image using the *sync* button. you can also delete images from within Lightroom. You have the choice to delete them permanently from your hard-drive or to just remove them from the Lightroom catalog. If you choose the latter, you can always reimport them back into your Lightroom catalog later if you wish. Be careful to always heed the warning signs when you delete a digital file. Once it is gone, it is gone for good.

Both Bridge and Lightroom offer the option to rate your work. In Lightroom you can use flags, stars, labels, and color, basing each rating on particular criteria you establish yourself. You might use red, for example, to indicate a file that you like, but needs a lot of work. However, you decide to use these labels it is crucial to be consistent. Otherwise, its a waste of time. Once you have marked the metadata of your pictures in this way you can "filter" through your whole catalog and find all the images with four stars labeled red, or some other variation. You can use *filtering* to search for any aspect of metadata.[9] This sort of extra labeling work can save you time in the long run if you are the type of photographer who takes hundreds of pictures every time you go out picture taking. For the mindful photographer, however, it is better to slow down and take fewer photographs with greater precision, care, and awareness. Then you won't need to label because the keepers will be obvious.

One very nice feature of Lightroom is the ability to create *Collections*, which is kind of like a virtual folder. You go to any folder and select some images you want to put into a collection, and then click on the + to the right of the collections bar and a pop up box will appear asking you to name your collection. This new collection only exists in Lightroom. It doesn't replace or remove the images in the folders

from which it was taken. You can easily re-order images in a collection by dragging them.[10] You can delete images from a collection without fear that it would be removed from your hard drive. You can add an image to a collection simply by going to any folder and then selecting and dragging the image to the collection. You can create new collections from other collections, and add to them from your other files. The upshot is that the collections are virtual, they only exist to help you organize material. You must first create a collection before you can work on a body of images for producing a book, slide show, or web gallery using the corresponding modules in Lightroom.[11]

Lightroom has the ability to export images to your hard-drive, or to burn them on a CD, and even to send them as e-mail, although you will need your e-mail server information handy to set this up. You can also use Lightroom's *Publication Services* to send your images to Facebook and other social media sites.

One advantage of Lightroom over *Camera Raw* is that it has a *History* panel, just like Photoshop. This is a handy way to return to an earlier point in the image processing sequence without having to undo everything that came after one step at a time. To reset one slider simply double click on it. To reset all the sliders in the tone panel, hold down the option key and click on *reset tone*. To reset everything and return to how your image looked like originally before starting, click the *Reset* button. Even though *Camera Raw* does not have a *History* panel it does have the ability to undo every change you made to the original file, and is thus equally non-destructive. It bears repeating that almost all the tools in the *Develop* module can also be found in *Camera Raw* in a different configuration. The ability to sharpen, for example, is nearly identical.[12] The *Transform* tools are also more or less duplicated. Lightroom does have some fancy editing features that are otherwise only available in Photoshop. These include Photo stich merge techniques for HDR (higher dynamic range) and Panorama. It seems like a good idea to do this kind of montaging in Lightroom rather than Photoshop because you will be working with RAW images that can still be readily modified non-destructively without the need for additional layers. Further refinements for retouching and dodging and burning can be made later in Photoshop if needed.

1 One could argue that *Phase One* software is also an alternative, however, it generally comes coupled with their extremely expensive products.

2 Unlike Camera Raw, you can print directly from Lightroom without having to go through Photoshop. There are a lot of templates that allow you to print multiple images, including contact sheets, and you can also customize a template. The printer options are perhaps too numerous, and hence confusing, but they do allow sophisticated printer management settings comparable to Photoshop, including profiles.

3 The Develop module tools and options are nearly identical to *Camera Raw* in terms of what they can do, however, they are set up differently. They are also considerably more compacted and streamlined. For example, the sliders are much shorter. Although Lightroom is a more cosmetically pleasing work environment, it is a little more challenging to achieve the precise desired result due to the tiny size of the sliders. This is probably not a problem if you are working on a very large monitor, or once you are used to it on a laptop.

4 The map module allows you to see where your picture was taken from a birds-eye view map perspective based on the GPS information in your image file's metadata. You can manually add GPS information to your photos by bringing up the map and dragging the photos to that spot in the map. This is simply another method to group and organize your photos, this time geographically.

5 To make a book, first start in the *Library* module and create a collection. Click on the *Book* module. Go to *Book Settings* and select *Blurb* or another option. Determine the size. Select the cover, paper type, and determine if the Blurb logo will appear. These factors will give you a cost estimate. This will change as you edit your book. You can use auto layouts and also customize the layout to a much greater extent than you can using the independent *Blurb* software.

6 To create a Web gallery of images, first select your images to be included and make a collection. Then click on the *Web* module. Simply choose the layout style, the background color, and click on *Create Saved Web Gallery*. This will show up in the collections panel. The web gallery can then be customized and uploaded to the internet. You can use the *Preview in Browser* button to get an idea how it will look before uploading it.

7 To make a slide show, first create a collection in the Library module. Click on the *Slideshow* module and select a template. Save the slideshow early on, and all the further work you do on it will be automatically updated. You can then begin to customize. Choose which images to use or not use in the collection and re-sequence them. Use the guides to determine how big the image will appear and if it will be offset from the center, etc. This is a very cool tool. Each frame can then be customized, which is generally not the case with most slideware software. You can zoom to fill frame if so desired. Lightroom has fast and flexible techniques for text overlays with a slideshow. Unfortunately, you can only set one time for all the slides, rather than using some slides briefly and others longer. However, there is considerable flexibility in terms of cross fade, pan and zoom, and other options. It is quite simple and standard to add music to a slideshow. The slideshow can be previewed in Lightroom, and then exported either as a PDF or a video.

8 You can easily go back and forth from Lightroom to *Photoshop* by selecting a photo, going to Photo / Edit In / Edit in Photoshop. Then the image will open and Photoshop and you can make changes either to the original file on a copy, or an edited copy with Lightroom Adjustment, which is probably the best option if you intend to return to Lightroom to make more adjustments. Many retouching and editing tools are simply not available in Lightroom, and so for these extreme adjustments it is best to work in Photoshop. That being said, one could wait till you have done all you need to do and can do in Lightroom, and then simply move onto Photoshop afterwards to finish up. The latter is probably a better workflow, although it is nice to know you have the option to go back and forth from Photoshop if you need to.

9 In the keywords panel on the right of the screen you can customize a tag for each individual shot. Then you can easily search for all the images with the same tag when needed. For example: *Four Winds Desert* could be the keyword tag, and then you could search through all your images in Lightroom and it would pull up every picture with that tag. This is called *filtering*. You might have twenty keywords, and you may have given your images three of those keywords. Filtering will find those three images instantly. You can even use filtering to see which images were taken with a specific lens, ISO, etc.

10 This works the same as grid mode in PowerPoint.

11 You can control/click on a collection bar and turn a collection into a *target collection*. This helps you more quickly add images to the collection by using the keyboard command "b." You can also make *smart collections*. These help you find all the images you labeled red, or three stars, etc. You can create your own smart collections by designating which criteria they need to meet, like shot with a particular camera and lens at a particular f. stop, etc.

12 When adjusting the *radius* while sharpening, which will control how far out the sharpening extends, hold down the option key to get a gray reading, like *high pass* in Photoshop. This will allow you to better see what areas are being effected. The *detail* slider will control texture. Keep it low for portraits and high for a weathered surface. The *masking* slider will block certain areas from being sharpened as you move it to the right. It will suppress the sharpening in those areas, which is good for subjects like skies and skin.

Part 3 — The Open Photograph

Composition

What the photograph doesn't show is as important as what it does. Freedom comes within boundaries. In Switzerland they have a scary saying: "Freedom is beautiful, but control is better." Clearly freedom is often misunderstood as the abandonment of all restraint. In actual fact, only a tamed mind can focus and make choices with mindfulness. One must be wary of not mistaking choices for blindly following a recipe. Once again, the mindful photographer takes the middle way, succumbing to neither the extreme of carelessness, nor the uncreative extreme of excessive control. The point is not to overpower viewers, but allow them some freedom in the act of looking. The composer John Cage put it this way: "To be able to move one's attention from one point to another without feeling that one had left something important behind is the feeling that I enjoy having and which I hope to give to others, so that each person can place their attention in an original way, rather than a compelled way, or a constrained way; so that each person is in charge of himself."

Essentially, photographic composition is deciding what to include within the frame and what to leave out, except for the incidental details one has no control over. Sometimes these details can be very important, so it is important to acknowledge this.[1] The photographer needs to moves up and down, right and left, and back and forth until they can't move anymore without making the composition

worse, and then release the shutter. In other words, the photographer adjusts their position in relation to what is in front of the lens in order to compose. This is very different from composition in painting. A painter can also easily decide to eliminate or add details. Not so for the photographer, unless they use Photoshop or related tools to create a fictional scene. Basically, the photographer may or may not have an allegiance to realism, but they have to acknowledge what is in front of their lens and in some way accommodate it. Composition in the studio is different. It is possible to set up a shot and control everything carefully. However, the photographer still needs to position the camera in relation to what is in front of it.

The purpose of composition is to generate a cause that will result in the effect of the viewer looking longer. We have short attention spans. Looking at pictures for a long time is a skill acquired through critique. Successful composition asks us to do a double take, to take an extended second look. This isn't easy for most people. We have very short attention spans, and evidence seems to suggest that our attention spans are decreasing. The average cut in a film thirty years ago lasted five times longer than it does today. As a culture we have grown accustomed to operating in the world at high velocity. This affects how long we can endure looking at a picture. People used to look at pictures longer in museums and galleries. Today we barely glance at them. A compelling composition can help lengthen that glance and invite the viewer to do a doubletake.

Basically, you start out with everything, and then you frame a small portion of what appears before your camera at a very specific moment or a blur of moments in time. Be aware what you are excluding and including in a meaningful way. Understand that the incidental details and projections of the viewer are out of your control as the author of the picture. Be aware also that context will inflect meaning on your image.

When you are out in the field taking pictures, don't think too much. Rather, empty your mind of thoughts and preconceptions so you can clearly see what is in front of you. This endeavor is supported by refraining from multi-tasking and by practicing mindfulness — which is to say, to be present in the ongoing moment of the picture-taking process with unwavering awareness. A great image that sends a rush does not come about from following a recipe. Rules are formulas founded on *fear* for people who don't know what to do, or how to think for themselves. People who need a lot of rules function very well in the studio because the element of chance, which is none other than the breath of life, is lessened there. Ask yourself this question: Do you want to imitate or innovate? There are lots of rules for how to compose photographs. Let's learn them, analyze their strengths and weakness, make sense of them, and move on. They are not necessarily universal principles, but rather historically rooted conventions.

Let's start by calling them *choices* instead of *rules*. One must take these with a grain of salt — which is to say, not to blindly follow a recipe, but rather to apply whatever seems useful in each particular case. However, please beware that sometimes a scholar-photographer knows too much. The head-heavy photographer might not take a picture because they think that so-and-so already did it. Take a deep breath and let some air in to carry that thought away. Find a new angle on the subject. Don't give up before you have started. Henri Cartier-Bresson had this to say about composition: "We look at and perceive a photograph, as we do a painting, in its entirety and all in one glance. In a photograph, composition is the result of a simultaneous coalition, the organic coordination of elements seen by the eye. One does not add composition as though it were an afterthought superimposed on the basic subject material, since it is impossible to separate content from form. Composition must have its own inevitability about it".[2]

Simplicity and Complexity

An old brochure of Kodak "guidelines" for composition instructs the aspiring photographer to choose uncomplicated backgrounds, move in close, and place the center of interest off-center, all in the service of achieving simplicity. It is a noisy world and challenging to make a quiet picture uncluttered with unnecessary details. The beauty of the minimal is certain. What is missing in the Kodak equation is the truth that within simplicity there is always complexity, and within the complex there is the simple. This is something everyone can check out for themselves without needing to blindly trust a rule. We might use the analogy of writing to look at simplicity. Generally, in good writing it is advisable to say what you have to say in the least amount of words possible. Yet it is also true that complex ideas require in-depth articulation, often peppered with difficult words. A good writer knows which strategy is more appropriate in any given context. Likewise, the mindful photographer should not disregard the simple in favor of the complex or vice-versa, but rather stay open to the spirit of each unique situation as it presents itself. Vincent Van Gogh put it this way: "Exaggerate the essential, leave the obvious vague." More than a generation later Edward Weston echoed with the words: "I see no reason for recording the obvious." Instead we should "emphasize the essential."[3] We must do this with respect. As Henri Cartier-Bresson put it: "In order to 'give a meaning' to the world, one has to feel oneself involved in what one frames through the viewfinder. This attitude requires concentration, a discipline of mind, sensitivity, and a sense of geometry– it is by great economy of means that one arrives at simplicity of expression. One must always take photographs with the greatest respect for the subject and for oneself."

Thirds (Or Maybe Not)

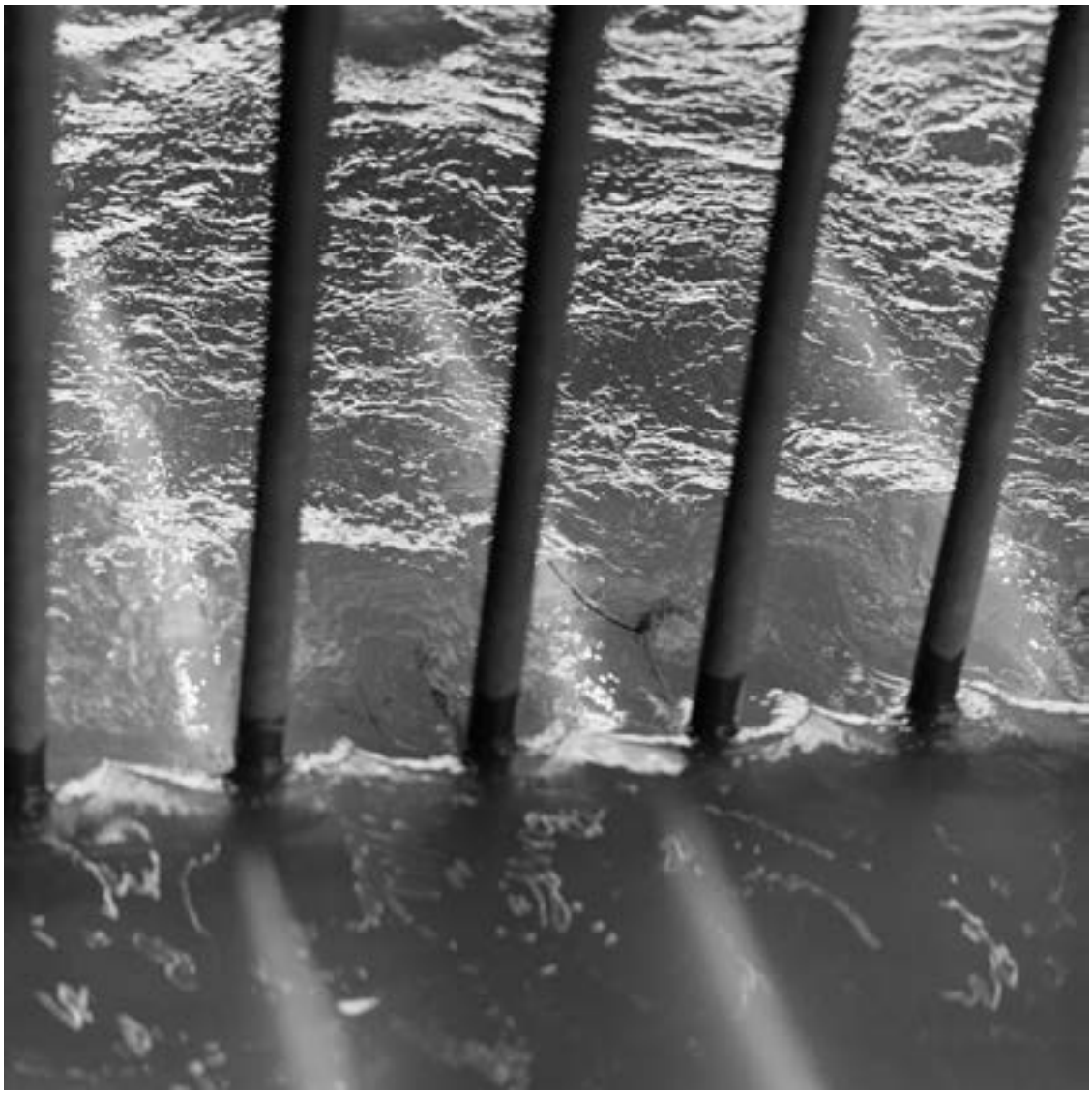
Now here's a meaty rule you can sink your teeth into without having to think for yourself or see originally. Simply divide the frame up into nine neat sections by placing a grid with two evenly spaced horizontal and vertical lines over the frame. Many digital cameras have a preset for this. If there is a center of interest in your picture, place it at an intersection in the grid. In a landscape, for example, this would divide up the sky and land in a ratio of 2:1, with a single cloud floating 1/3 in from one of the the bottom or top corners. You have seen this before, right? This

rule was first articulated with good intentions to promote harmony in academic painting by John Thomas Smith in 1797 in an article entitled *Remarks on Rural Scenery*. However, even his contemporaries warned that such a practice could lead to monotony and uniformity. If this rule is correct, nearly all the work of Walker Evans, August Sander, Karl Blossfelt, Frederick Sommer, Rineke Dijkstra, and countless other photographers must be disregarded. In blindly accepting this rule we are by extension rejecting all symmetrically composed works of art in many cultures; a conclusion which is not only absurd, but also ethnocentric.

Nevertheless the rule of thirds is a *Hallmark* of tradition that continues to find its way onto sympathy cards precisely because it is a safe way to make a photograph look like outdated art. That being said, you shouldn't rule out following a rule just because it's a rule. Very often beginners place their subject in the middle of the frame without considering other alternatives. There may be times when the rule of thirds really is the best way of arranging what you see through your viewfinder, but be careful not to use it as a default. If there is something universal about the rule of thirds — and there very well may be — then any photographer who is really on the ball will find out for themselves. If it's not true, then dispensing with the preconception that the viewfinder has to be divided up into nine rectangles with power points where the lines intersect won't block other possibilities from revealing themselves to a clear vision free from fetters.

Lines

It has long remained a question in psychological interpretations of visual art as to what exact effect different types of lines produce or stimulate in the mind of the viewer. This goes back to antiquity. In our epoch such concerns can be traced to Gestalt psychology and the early modernists such as Paul Klee, Wassily Kandinsky, and Lazlo Moholy-Nagy at the Bauhaus.[4] Paul Klee's *Pedagogical Sketchbook*, first published in 1953 long after his initial observations, goes into considerable detail on the subject. Many others, in particular the late modern art theorist and perceptual psychologist Rudolph Arnheim, have elaborated extensively.



The curve, diagonal, horizontal, vertical, and the inevitable combination of these types of lines does indeed deserve inquiry. It is said that curved lines give a sense of flow and rhythm, as well as being very sensuous, elegant, graceful, slow, and beautiful. Horizontal lines are theorized as calm, stable, passive, and serene, perhaps reminding us of sleep. Perpendicular to the horizontal is the vertical, which is perceived as active, conjuring up feelings of stature. The spiral is an invitation to vertigo. Triangles convey a sense of strength and structural integrity.

This all sounds reasonable enough, yet even so the vertical city monument photographs of Lee Friedlander do not come off as particularly active or strong images, but actually rather sad and goofy. Whether or not a particular image is perceived as active or passive depends not only on the arrangement of forms, but also on the emotional and intellectual impact of the subject matter, and the relationship the viewer has to that content. All these factors are inseparable. Diagonal lines are said to be dynamic and active, implying motion, and zig zag lines extremely rapid. We can consider the work of Alexander Rodchenko as evidence of this. Sometimes, however, a diagonal line might mean something else, such as when Robert Adams tilted the horizon line of a Colorado

landscape at a site which had been at one time in his youth a place of inspiration and beauty, yet at the moment of taking the picture, decades later, a reminder to both himself and us that humankind has really screwed up our habitat.

If you want your image to function in a very formal and abstract way, pay attention to the lines and how they make you personally feel physically and emotionally rather than rely on a rule or a theory. Sit

with them and let them work on you. Observe them in nature, if you still believe in the authenticity of nature. However, as soon as you introduce a documentary element, which is to say whenever you use your picture as evidence, don't separate form from content, the lines from what they designate. A union of formal and documentary approaches will produce a more engaging image that holds the viewer's attention longer.

Harmony (Or Maybe Not)

In his *Ten Books on Architecture*, the Renaissance humanist Leon Battista Alberti wrote: "A harmony and concord of all the parts in whatsoever subject it appears, fitted together with such proportion and connection, that nothing could be added, diminished, or altered but for the worse." In terms of photography, this sounds a lot like looking through the camera's viewfinder and moving backward and forward, right and left, up and down, until you can't move anymore without making the composition worse, and then releasing the shutter. Alberti's rational approach worked with proportions derived from music theory, whereas the photographic method described above is more intuitive and based on mindfulness. In either case, the question arises as to whether or not you always want harmony in a composition, and that depends considerably on the subject matter. If you photograph dissonant content, such as a war scene, for example, then maybe a consonant balance of elements in the composition might actually work against your intention to generate a sense of conflict. Similarly you would not use the rule of thirds to photograph a mushroom cloud. Rather, a symmetrical composition would be in order. The rule-makers advise us against using symmetry, claiming that it is both unharmonious and divisive. That's pretty weird when you consider that every single culture in the world appreciates symmetry in its artwork in one form or another. The claim against symmetry is both stupid and ethnocentric precisely because it ignores the grace and power of a symmetrical composition when appropriate. Symmetry is also inevitable when working with the vanishing point, a Renaissance drawing technique inherited by photography that projects the viewer's attention into a single point in the distance representing infinity. Countless photographers, such as Dorthea Lange, Stephen Shore, and Robert Adams, have found their own unique way of using the vanishing point with great success without

giving the viewer the feeling that they had re-invented the wheel.

Try squinting your eyes. This will temporarily suppress the identification of literal content and accentuate the placement of light and dark masses in your composition. The point is to seek balance in composition when appropriate to evoke peace and gracefulness. Alternatively, if you wish to to avoid visual harmony and use the camera to complain or as a vehicle of activism, try placing your center of interest very close to the edge of the frame. This generally creates tension. Similarly, a tilted horizon feels unnatural. If that's the feeling you wish to convey, then don't tilt the horizon just a tiny bit, because that will read as a mistake. Tilting full throttle will read as intentional. The easiest way to get your lines deliberately straight or slanted is to carefully compose the image. Perspective correction, whether done with a view camera before exposure, or in Camera Raw after digital capture offers additional techniques that will help bring your intention, vision, and result into alignment. Most importantly, the mindful photographer understands that they can only make a harmonious image when they are in balance themselves. This means being present in the ongoing moment, neither longing for the past nor dreaming of the future. Then you can focus clearly with the aspiration to notice the overlooked details that surround you in the rush of life and to skillfully craft that awareness into a compelling image to share with others. This gift can only be received by the photographer when they have relaxed into a state free of grasping. Try it.

Other Compositional Criteria

In addition to the vanishing point and linear perspective that have already been introduced, there are some compositional factors that can help give a sense of depth to the image. Foremost among them is what is called *framing*, which involves surrounding the center of interest in a photograph with other foreground elements. This could involve asking your subject to stand in a dark doorway or look through a window, thereby isolating the main subject of the picture. Paul Strand did this frequently, and he is not without his imitators. However, it is not always possible or desirable to find foreground elements to surround your subject with. Indeed, it is already quite an assumption that every photograph needs to have a center of interest. However, if that is the case, in addition to framing there are a few additional cues that can accentuate depth perception available to the photographer. These are: the inclusion of haze; shades, shadows and texture gradients; and overlapping.

Sometimes when two subjects overlap they merge into each other. This can easily happen when two colors translate as nearly the same value in black and white. This can be avoided by learning how to pre-visualize what an image will look like in black and white. Once again, squinting the eye can be helpful. Mergers can also occur when the photographer doesn't pay sufficient attention to the background. You have all seen those pictures of Mom with the telephone pole coming out of her head. You can avoid mergers by adjusting the camera's position and looking for simple backgrounds. However, don't just accept the idea that all mergers are bad. Sometimes they add to the mystery of an abstraction, and other times they are just funny. Many photographers, such as Carl Chiarenza, Ralph Metzker, Minor White, Aaron Siskind, Harry Callahan, Ralph Eugene Meatyard, Francesca Woodman, and James Welling have made successful intentional use of mergers in their photographic art. These photographers have understood that not only the subject, but the spaces in-between the subjects can connect disparate elements and energize an image.

The impressionist painter Claude Monet once said "To see we must forget the name of the thing we are looking at." Photography, however, is different than painting because the photographer doesn't start with a blank canvas, but rather with the world of appearances. You start from where you are, with what's given. In this sense photography is less utopian than painting. The photograph is both an image

and a document, and as an image it inherits the concerns of other kinds of images, such as painting. Insofar as these concerns empower the photographer with an integrity that is genuine and based on experience they are useful. What Monet said strikes a responsive chord, yet the photograph is also a document, and thus the name of the object sticks whether we like it or not. As Roland Barthes put it in his final book *Camera Lucida* "the referent adheres." In simpler words, Barthes means that the subject matter is relevant regardless of the composition and technical mastery of the image.

Another painter, Agnes Martin, had this to say about composition:

"Composition is an absolute mystery. It is dictated by the mind. The artist searches for certain sounds or lines that are acceptable to the mind and finally an arrangement of them that is acceptable. The acceptable compositions arouse certain feelings of appreciation in the observer. Some compositions appeal to some, and some to others. But if they are not accepted by the artist's mind they will not appeal to anyone. Composition and acceptance by the mind are essential to artwork."

So in the final analysis you are the artist, and you need to decide what to include and what to leave out of the frame. You need to keep trying new angles until you are satisfied. There is a simple rule for this:

Don't give up. Someday you may notice, or someone may point out to you that you have a style of your own. This happens all by itself through years of diligence that evolves into effortlessness. There is no recipe for this except to learn your craft, step out of your comfort zone, and keep trying new things and take risks. Don't always play it safe. It's not a competition with a goal to be achieved at some distant point in the future. The mindful photographer understands that the next picture is never far away from this very moment if clear awareness and auspicious circumstances are present.

1 In the book *Camera Lucida*, Roland Barthes muses extensively on the subject of the meaningful incidental detail, which he calls the punctum.

2 *Photographer's On Photography*, edited by Nathan Lyons, page 46, Prentice-Hall, New Jersey, 1966.

3 Steve Lehmer, a LA and Montana-based photographer often quotes a saying attributed to Henri CartierBresson that he heard on an old filmstrip / cassette tape presentation: "Eliminate the obvious, emphasize the essential." He also said: "It takes a lot of milk to make a little bit of cheese."

4 The Bauhaus was a highly influential art school in Germany during the Weimar Republic between WWI and WWII. It was forced to close by the Nazis, and then later re-located in Chicago to become the Chicago Art Institute.

How Photographs Make Meaning

If the art of mindful photography is to be a path of awakening, then it goes without saying you need to know just what it is you want to be awakened from. Meaning is always coded and operates in a system. However, to be truly awake is to see through the system and understand it is only one way of seeing things, not the one and only true way. To see beyond the limits of conceptual elaboration means that we don't hold to a notion like "this is it" or "this isn't it" or "this is both it and not it" or "this is neither it nor not it."[1] In other words, we avoid that kind of *reification*,[2] and practice art as the activity of openness that inspires wakefulness. Yet how can you make a picture free of pictorial codes? Perhaps you can't. Before you can even begin to answer that question you need to acknowledge that whenever you look at a photograph there are always three things: the *image*, the *observer*, and the *context*. These always function inseparably insofar as you can never experience a picture without someone looking in real time. That being said, we can only talk about this triangular nexus of meaning one point at a time.

The Image

If you focus only on the image, then your analysis will be strictly formal. The word "formal" can mean dressing up for the prom. It can also mean organizing positive and negative space compositionally to evoke emotional responses. Here formalism is defined as a kind of critical method wherein the image and the image alone is examined to extract a meaning contained therein. Formalism presumes without question that the meaning of the image is contained within the image. It further implies that only smart and cultured people will be able to access that meaning. Formalism is a critical invention that seeks to identify the unique qualities of any given medium, and then evaluate the artwork in question based on the contribution the artist has made to furthering the discourse of that medium. In other words, what she or he has contributes to the ongoing conversation.[3] Formalism tends to regard kitsch and entertainment to be either frivolous and bad art, or not art at all. It also rejects sequenced and hybrid art, the mixing of one or more mediums. Formalism is a discourse inseparable from modernism and its utopian mission to privilege images over words to articulate the sublime and visually embody the values of truth, beauty, and excellence non-discursively.[4]

The image has three things to consider: *the subject matter*, which is to say what it is *of*; *the topic*, what it is *about*; and what it looks like supported by all the technical decisions or lack of them that determine *style*.[5] Most of the time we know what a photograph is of. In the rare instances we encounter a photographs that looks abstract, we still endeavor to try and figure out what it was "of" in a way we would never do with an abstract painting. Far too often, the content of a picture is the only thing a viewer is interested in. It's the bait that hooks the innocent viewer. A more sophisticated observer might also be drawn to the *topic*, what the picture is *about*. In Robert Frank's *The Americans*, for example, the photograph of a covered car in Long Beach operates in the sequence as a visual metaphor for death. It is *of* a covered car, but it is *about* death. Different systems of thought use the term "symbol" to refer to a particular kind of sign, or something distinct from a sign, therefore, the phrase *visual metaphor* is preferable to *symbol* to describe photographs that invite the viewer to take a leap of the imagination to something not pictured.[6]

In his seminal and last book *Camera Lucida*, Roland Barthes introduced the idea of the *studium*, a word he uses to define the banal human interest behind a photographic image.[7] The *studium* includes both the subject matter and the topic, which he holds distinct from the *punctum*,[8] the incidental detail that pricks us and awakens personal meaning. As a photographer you decide what to include and leave out, except for the incidental details you have no

control over. The *studium* is more public and general, whereas the *punctum* is more personal and specific. As a photographer you have control over the *studium*, but not the *punctum*.

Most people do not consciously think about style, yet they react to it nonetheless. Robert Frank together with William Klein were pioneers of the grainy high contrast street photography style that influenced so many other photographers, including Danny Lyon, Diane Arbus, Ralph Gibson, and countless Japanese photographers in the 1960's and 70's, most notably Shomei Tomatsu. This is what we mean by *style*. Even when a photographer tries to deliberately not have a recognizable style but rather to keep their hand invisible, they are then operating in a documentary style. Style functions like myth, which is to say, stories we live by yet never question, but in the case of photographs technical choices we live by but never question. These choices are coded. High contrast doesn't mean the same thing as low contrast, and furthermore that meaning can change from culture to culture.

Artists must be aware of these hidden codes, and also be cognizant of the counter myths that challenge the dominant myths. An illustrator is someone who is comfortable working within the boundaries of pictorial conventions. A maverick artist, on the other hand, works out of their comfort zone, testing and pushing the boundaries, swimming out to deep waters. That's why artists often give up. It is not easy to tread the waters of uncertainty never knowing if one will be able to reveal a hidden intention and transmit that to the viewer. You need to keep at least keep one toe touching the bottom to not be completely obscure. Even if you can't rely on the universality of a symbol, you can still look for poignant patterns.[9]

In a nutshell, the image does one or more of the following three things: it looks like the subject (iconic sign); points to the fact the photographer was there (indexical sign); and tells more than meets the eye (works symbolically). Semiotic analysis is based on the notion that photography is a kind of language, but in fact it is at the very best a primitive language. Language tells; images show. That being said, photographs are coded and we would do well to understand those codes. As for style, well, the mindful photographer doesn't fabricate a style. It emerges slowly over time through the depth of their inner sensibility and peace with the world.

The Observer

The image cannot be seen without an observer, and the person looking brings many preconceptions and prejudices that are then projected upon the picture. In other words, we do not see photographs as an aggregate of grains or pixels, but rather experience them emotionally and intellectually. They are not just information telling us something as words do, but rather they show us something that will generally cause attraction, aversion, or neutrality depending upon our personal history. A Hindu and a hungry cowboy are not necessarily going to view a picture of a cow in the same way. For one the subject is sacred, and for the other it is something to eat. This affects the meaning of the picture. Most often the intention of the photographer is not available to the viewer. The best thing the viewer can do is approach the photograph with openness and let it speak to you. An art photographer does not know what you will make of their work. They must first satisfy themselves. An artist can do this by hanging the work in their studio to see how it holds up over time. Alternatively, you can just put it away and look at it a few months later. By then your attachment to the images will have somewhat worn off and you can see it with fresh eyes.

Let's look at a cinematic example of two very different observers. In Ciro Guerra's film *Embrace the Serpent* (2016),[10] there is a scene about fifty minutes into the film where an Amazonian native, Karamakate, sees his new acquaintance, the German anthropologist Theo, wash a glass negative in the river. It is a

portrait of Karamakate, the very first photograph he had ever seen. The following dialogue ensues:

Karamakate— What are you doing? (He takes the negative from Theo.)
Theo — I have to keep it.
Karamakate — But it's me.
Theo — It's not you. It's an image of you.
Karamakate— Like a *chullachaqui*?
Theo — A what?
Karamakate — A *chullachaqui*. We all have one. He looks just like you, but he's empty, hollow.
Theo — This is a memory; a moment that passed.
Karamakate — A *chullachaqui* has no memories. It only drifts around in the world, empty, like a ghost, lost in time without time. Are you going to show my *chullachaqui* to your people?
Theo — If you allow me.

This exchange raises a number of interesting questions. How does it come to pass that some pictures appear *alive*, and others dead? How is it that a picture can seem dead, like a *chullachaqui*, only to come to life later in time, or the reverse, when a living image seems to die and become a mere piece of paper? Perhaps it is appropriate to call a photograph "art" when it seems so alive that it is as if it is ready to leap from the frame and devour the viewer with the intoxication of imagination. Is it real? Perhaps this is not the right question to ask of an image tiger. The photograph is silent. For this we can be grateful. As a memory trigger, a photograph will eventually become a reminder of loss, a document of something that once lived and lives no more. When we call a photograph "art," we are implying that the art is present and alive, yet ultimately this is for the observer to decide.[11]

It is reasonable for the mindful photographer to consider what makes one picture more alive than another in the mind of the observer. Photographers have no choice but to start with themselves. To say that the mindful photographer receives a picture, like a gift, by letting go of a grasping mind, is to suggest that the life of an image precedes the conception and making of the image, just as after it has been made it takes on a life of its own. This process is a mystery. The unborn photograph exists in the world of possibility. The mindful photographer learns how to let go and come into that zone of openness. The mindful photographer does not "capture" a picture as a hunter would. There is no trap and no cage. The door is open, and receiving a picture or not hinges on clear awareness, patience, knowledge, preparedness, and gratitude.

The Context

The context, meaning the situation within which we see a photograph, was never really much considered until postmodernism. To see a photograph in a dimly lit museum behind bulletproof glass with a guard standing next to it is indeed a different experience from seeing the same photograph in a gallery with a big fat price tag. Similarly, to see that same image on a postcard that someone used as a coaster for their drippy coffee cup, or to see it fleetingly pass by on a screen saver are entirely different contextual experiences. Similarly, the idea of the diptych in photographic art is predicated upon the knowledge that putting two images next to each other modifies the meaning of both. This is also true of the triptych, sequence, gestalt, and montage. The presentation and dissemination of photographs affect their meaning.

These days more often than not, the value of an image is based on its marketability in the gallery system. Too often fashion and money dictate what looks sexy this year. We need to get over that to find palpable meaning in photography and art.

The Image, Observer, and Context in Union

So you see, as you look only at the image through the obscuring veil of your projections, in ever changing situations, the meaning will be in flux. Even the light falling on the image will influence your reading of it. What does it show you? How will that change

over time? The image will change. You will change. The context will change. We must accept a certain degree of openness. The photograph, or any other image, is empty of an inherent meaning, but it is not meaningless unless you don't care. Better still, a good photograph, like a good song, might just send a rush up your spine, if the moment is ripe.
The community of artists is there to cultivate these connections and help each other. So go throw some seeds of your own and see who notices.

1 These four extremes correlate with the Madyamika philosophy of Nargajuna.

2 Reification means to mistake something which is abstract for something solid. It is to hold on to something so tight, that the idea becomes imprinted in your psyche and you begin to believe it. It could be something as simple as the idea that you have no musical talent, or men are stronger than women, or whatever nonsense. It takes hold of you and blocks progress.

3 The first comprehensive formalist manifesto of photography came rather late in 1964 and the book that followed in 1966 with the appearance of *The Photographer's Eye* by John Szarkowski, photography curator for the Museum of Modern Art in New York. Therein he laid out five principles upon which one could evaluate a photograph formally. These were 1. "The Thing Itself," meaning photographs that operate realistically; 2. "The Detail," meaning that the details photographers notice operates symbolically rather than to tell a story; 3. "The Frame," meaning essentially composition; "Time," the photographer's choice and skill regarding which moment to stop or blur; and "Vantage Point," finding new perspectives and ways to order the world photographically.

4 It appeals to what Suzanne Langer refers to as "presentational" instead of linear sequential thought.

5 In the language of semiotics, which is the study of signs and signification, the subject is called denotation, and is the first order of signification. The second order is the topic, which has three dimensions: connotation, myth, and symbol. Style relates to the second order.

6 In the language of semiotics, a symbol is a kind of sign that operates like a visual metaphor, which is to say, a mark that invites the mind to take a leap of the imagination to something not represented in the picture. However, in other systems of thought, such as analytical psychology, a symbol is something distinct from a sign. It is less clear in meaning and more open to interpretation. Please understand that I am describing systems of thought rather than absolute truths.

7 On page 26 of *Camera Lucida*, Barthes defines the studio in his usual dense language. "What I feel about these photographs derives from an *average* affect, almost from a certain training. I did not know a French word which might account for this kind of human interest, but I believe this word exists in Latin: it is *studium*, which doesn't mean, at least immediately, 'study,' but application to a thing, taste for someone, a kind of general, enthusiastic commitment, of course, but without special acuity. It is by *studium* that I am interested in so many photographs whether I receive them as political testimony or enjoy them as good historical scenes: for it is culturally (this connotation is present in *studium*) that I participate in the figures, the faces, the gestures, the settings, the actions."

8 Barthes defines the punctum as follows: "The second element which will disturb the *studium* I shall therefore call *punctum*; for *punctum* is also: sting, speck, cut, little hold — and also a cast of the dice. A photograph's *punctum* is that accident which pricks me (but also bruises me, is poignant to me)." (page 27).

9 There is an ongoing debate as to whether or not symbols, and also myths are universal or exclusively culturally and historically conditioned. The color red, for example, with its deep association with desire is a multi-cultural phenomenon which could not have been the result of direct cultural contact. However, the use of red as referring to *stop*, or *no parking*, or *communism*, to name just a few examples are culturally determined. A structuralist will look for the underlying patterns in differing cultures. This approach stems from the French Marxist anthropologist Claude Levi-Strauss. Post-structuralism points out that we identify patterns and deconstruct from a biased cultural perspective, and that this bias is largely language based. This system of thought is attributed to Jacques Derrida. There is a nihilist bent to this contemporary form of thinking. Deconstruction dates back over 2000 years to the philosopher Nargajuna, one of the founders of Mahayana Buddhism. Within that system, deconstruction always leads to emptiness and non-reification, balanced by compassion and the aspiration to benefit others.

10 This film shows, perhaps for the first time, the perception of colonialism from the native's point of view. It calls for a renewed respect for native people's everywhere, a call for natives to continue singing the songs they have sung since before history.

11 Two very similar looking photographs might be regarded very differently, for example, one as art, and the other as as evidence, a common cultural artifact, a document of someone else's art. Consider, for example two photographs, one a document of his installation of mirrors on location in an installation by Robert Smithson, and another photograph by Abelarado Morell of mirrors that were installed in a location for the specific purpose of making an art photograph. In the case of the latter, after making the photograph the mirrors were removed, not so in the former case. In these examples the Smithson snapshot functions as a document of art, whereas the Morell photographic print functions as the actual art object. That being said, in neither case is the idea that the art is in the looking discounted.

Defining And Making A Series

What makes a group of photographs a *series* rather than a random collection of images? The key idea is *continuity*, which means a continuous flow. Continuity is like the thread that holds together many beads. Without that thread, all of the individual photographs would not hold together as a series. Generally speaking, the subject, the topic, and the style of a group of images need to be similar to generate continuity. Together they are the thread that holds the series together. So if you want to make a series, the first thing you have to do is decide what to point your camera at.[1] Then do it, again and again, in as many situations and from as many perspectives as feasible to exhaust all the possibilities. Your subject must be something tangible and specific, whereas your topic is more general. You can point your camera at two people, but you can't point your camera at an idea like love. In this example the people are the subject, and love is the topic. Likewise, themes like diversity, inequality, and alienation are not subjects, but topics. You cannot point your camera at diversity, but you can direct your camera at subjects that represent diversity.

It is important that the pictures you take and make have a similar look to them. This will be determined by a number of factors, but firstly by how you limit yourself technically. Start off with the simple decision of whether the photographs should be made analog, digitally, or hybrid. Next should they be black and white or color? How large do they need to be? This can be partly answered by deciding if they will live online, on a gallery wall, in a book, or all three. Limit yourself to the least amount of equipment and variables you feel comfortable with. If you shoot with the same camera, one lens, a specific film, and print on the same kind of paper, the images will begin to have a continuous look to them. This helps establish a style, although style is something much deeper and more personal than that. Style evolves out of a sensibility and only begins to appear as you mature as a person and as an artist.

A group of pictures that tells a story is not a series, but rather a narrative sequence. Unfortunately, a series and a narrative are often confused. They are similar in that both comprise individual elements that operate as one unit, but that is where the similarity ends. The subject of narrative is addressed later in this manual.

The purposes of a series may vary greatly. Some artists may wish to raise their voice in activism and use their photographs as evidence to incite social unrest and action. Another artist may silently utter a visual poem through a careful non-narrative sequence of photographs that beckons the imagination. Both endeavors are noble and worthy. The latter kind of series is rarer because it emphasizes the quality of things rather than things. This approach generally takes a lot longer because the photographer needs to walk with their camera with mindfulness, but without an agenda, in a spirit of exploration. Once the search is in progress, eventually something will be found, but just what that will be is not known from the onset. Over time a series will begin to emerge. Poetry, whether written or visual, creates multiple associations in the viewer that are not intended to be fixed and final. That sort of open reading asks more of both the artist and the viewer, and cannot be produced by following a simple recipe.[2]

Another very strict type of series is the *typology*, which is a kind of visual collection of one type of thing done in a formulaic manner. This means most of the decisions will have already been made before you leave the front door. In addition to keeping all the technical variables consistent, such as camera, lens, etc., you will also need to look for consistent light, consistent weather, and most importantly photograph your subject from the same angle. When making a typology, not only must your subject matter be consistent, but also your composition. All this will draw the viewer's attention to comparing

the subtle and obvious differences of your chosen subject matter, rather than differences in print variation and photographic method. Consequently, the typology is usually an extension of the documentary genre insofar as it operates in the idiom of realism, wherein the photograph is regarded as an artifact of evidence, cultivating the illusion of objectivity. Just as a typology of butterflies in a natural history museum would be hung in a grid, most probably a photographic typology would as well. The grandfather of typological photography was the great Frenchman Eugene Atget. However, it was in Germany more than anywhere else that this tradition matured with the work of August Sander and Karl Blossfelt. Decades later, the husband and wife artist couple Bernd and Hilla Becher produced and compiled perhaps the worlds most classic and extensive catalog of typological photographic work.[3]

Let's be clear, however, that a body of photographic work does not have to be a typology to be called a series. Where are you likely to encounter a series of photographs? Nowadays this could happen just about anywhere from the metro, to a lifestyle magazine, to an art gallery or museum. This was not always the case. In the early days of modernism most photographers did not work in a series.

Is it important to always work in a series? The answer depends on whom you ask. There has certainly been a noticeable revolt away from the series in many of today's young artists. It bears repeating that a series of photographs generally requires a continuity of subject, topic, and style. Perhaps the recent move away from the series is at least partly due to a lack of interest in any particular subject and topic, and a lack of commitment to a superficial style, and this lack, as it were, is fully understandable.[4] We need to get over the idea that art is a luxury. Art is a necessity. It has been said that every sane person needs some form of art, some contact with nature, and some form of meditation in his or her lives.[5] Whether that manifests in the form of a series is, at the end of the day, not that important. However, if you want your work to be more cohesive and meaningful, then learning how to make a series is a good start. Remember that you need to try to satisfy yourself, whatever it was that made you want to put together a series in the first place, and be your own hardest critic.

Portfolio Development

A portfolio is a set of works that give either a gallery, a school, or a prospective employer an idea of your photographic accomplishments. Consequently, since a portfolio can serve so many diverse needs, there is no one single recipe for making one. Suffice it to say that in order to put together a portfolio you need to consider who your audience is. In other words, the portfolio is not for you; it is for others. if you are making a portfolio of your artwork, usually a gallery or a school will want to see that you have learned how to develop and produce a series. Compile your strongest work from three or four different series you have made. This should be *physical* work — prints. An online portfolio in the form of a website is good to have as well. You can show a lot more work online, but it can be somewhat overwhelming. Also sometimes an electronic portfolio is deceptive. It is easy to make pictures look good on a small computer screen, but making fine art prints is another matter altogether. If possible, do both. Don't depend on a fancy box to impress anyone, but also don't be shy about showing that you care about your photographs and know how to preserve and display your prints archivally. The practice of mindful photography extends beyond taking the picture and includes the whole process of sharing the work with others. The mindful photographer should think of the portfolio more as an offering, rather than arrogant self promotion.

A portfolio is generally accompanied by an artist statement, project statements, and a resume. It is good to keep a record of what was going on in your mind when you put together a body of work. It may be obvious and clear to you now, but over time the details will start to fade. You may indeed find that

after many years you return to a theme you had once dealt with earlier, although this time from an entirely new perspective. Most artists return again and again to the same three or four themes throughout their careers. Writing can help a lot to bring clarity to those concerns and your own unique sensibility and contribution.

A commercial portfolio should be tailored for your prospective client. Represent your vision and technical skills honestly. It is probably sufficient to do a commercial portfolio mostly digitally and online. Remember, as stated at the onset of this manual, that a commercial photographer, unlike the fine artist, has no choice but to embrace the values of the industry. Show your client that you have done so. Be sure to include examples that show your knowledge of specialized lighting and competency with Photoshop. Obviously a portfolio of food photography or architectural photography or wedding photography is going to need to display a different set of skills. Once again consider your audience and build your portfolio accordingly. The goal of the commercial portfolio should be focused on getting the job.

When approaching a gallery, it is good to be clear what type of artwork a gallery represents, which is to say, what art world they participate in. This is the subject of the next chapter.

1 That being said, it is not enough simply to have strong subject matter, whatever you conceive that to be. A museum of photography, like the Annenberg, for example, needs to be more than a museum of popular culture.

2 Worthwhile examples include titles such as: *Notations In Passing* by Nathan Lyons, *Days at Sea* by Ralph Gibson, and *The City* by Mitch Epstein, among many many others.

3 The work of the Bechers participates in the multiple discourses of conceptual art, New Topographics photography, and post-industrial archeology. Many students of theirs have extended the typological tradition, particularly Thomas Struth and Claudia Hofer. In Japan, several of the series by Hiroshi Sugimoto have utilized the typological approach, in a much more poetic manner. Here in the United States we have artists like Ed Ruscha who have used the typology as a form of conceptual art. In very different ways, Mark Ruwedel and Jeff Brouws have re-imported Ruscha's message back into the discourse of contemporary photographic art and brought it down to earth.

4 Postmodernism postured as the end of the new and original. Now that postmodernism is history, how can we expect today's youth to reassert a sense of commitment and urgency in their art practice? It is so difficult to be an artist now that I have confidence the survivors of our art schools will do exactly that.

5 This idea is paraphrased from Michael Meade.

Discourses of Contemporary Photography

How many times have you been confronted with the question? "What kind of photography do you do?" Contemporary photographic practice is extremely broad, so the first thing you need to do to answer that question is to narrow down what interests you. There are four main overlapping discourses or spheres of photographic practice. A discourse is something like an ongoing conversation that starts before you, and ends after you, and includes whoever participates in it. These conversations can be broad or narrow, and they may overlap into other discourses regarding spheres of activity. Specifically,

these are amateur photography, commercial photography, fine art photography, and photo-based art. Within that, there are sub-spheres and hybrids that branch out in multiple ways. We will endeavor to scratch the surface of these myriad forms of photographic practice. Some of these disciplines constitute an entire genre, such as portraiture or landscape, and these will be examined at greater length in the chapters that follow.

Amateur

Amateur photography includes any kind of photography that is not aiming to be seen in an art gallery or to produce income. Amateur photographers make a living doing something else other than photography. Millions of snapshots are taken every day. No one really knows how many. Now that nearly all cell phones are also cameras, the snapshot is costless and nearly effortless, and everyone is a photographer. The snapshot includes every genre of photography; however, the primary use of a snapshot is to capture a memory, to say "I was here." It is the ultimate document because no one questions the authenticity of the artless picture. When amateurs graduate to more serious cameras they often participate in what has been called "the county fair aesthetic," which is to say conventionally beautiful, often cliche renditions of safe subjects. Sometimes amateur photography can become a very serious hobby, expanding into clubs dedicated purely to enjoyment. Serious amateur photographers are generally not interested in aesthetic or anti-aesthetic theories of art and tend to regard photographers that are involved in these discourses as snobs.

Some snapshot photography overlaps into art. There is a form of art photography that exploits the snapshot aesthetic to give a sense of unaltered genuineness. The snapshot aesthetic uses the casual style and crappy quality of the amateur to reveal hidden lives or to expose those things people aren't supposed to talk about. Through our selections of pictures, we engineer memories. The snapshot aesthetic is simply a way of working where technique is disregarded in favor of humble results that illuminate otherness and validate difference. There are many art worlds. The snapshot can be art if artists say so, and also because it continues a tradition of catharsis. The snapshot aesthetic displays alternative lifestyles and exposes vulnerability on both sides of the camera. The observer participates as a voyeur with permission. The snapshot aesthetic critiques hypocrisy and abhors prejudice, and should not be judged based on the criteria of works that seek to celebrate nature with big negatives.[1] Unlike the casual portrait it does not need to be considered good photography. Attachment to craft can get in the way of opening one's heart to the poignancy of these tragic photographic diaries and personal documents. For those living on the fringes of society — the artists, junkies, clowns, gangsters and queers — there is a need to feel part of a community. Sometimes the low tech approach is just because the artist isn't very sober, and other times it is a deliberate decision on the part of a skilled photographer to use a simple camera rather than a more sophisticated machine that delivers unwanted slicker results. Sometimes it's a little of both.[2] The upshot is that through mastering our craft we learn how to make our hand invisible. It's like playing music. Both an amateur and an accomplished player can improvise a simple tune, but the result will not be the same. A ripened photographer may very well have grown tired of all the old tricks. The snapshot aesthetic is a device intended to remove the obvious sense of artifice behind a picture. Like all snapshots, the picture says "Look, I was there, I saw this. Look!" It is an index of the moment.

Professional

Photography can be a very lucrative profession, although it is much harder for the professional to compete with the amateur than it used to be. The reason for this is that amateur photography has become so easy and cheap. Success as a commercial photographer depends equally on a photographer's business skills and photographic skills. A professional photographer is someone who makes a living doing

photographic commissions in the marketplace. It is inevitable that a professional photographer will sooner or later need to specialize. The range of possible assignments is staggering. It encompasses photojournalism, product photography, pornography, portraiture, paparazzi photography, and that's just the P's. If you make money with a camera, you are a commercial photographer. Business skills are equally important to technical skills in this sphere of photographic practice. Many professional photographers have also promoted themselves as artists, such as Diane Arbus, Richard Avedon, Annie Lebovitz, and Bruce Weber. They tend to separate their commercial work from their art, but not always.

Fine Art

Fine art photography is, simply said, art made by photographers, whereas photo-based art is photography used by artists.

These two art worlds are very different, in that they come from different lineages of thought and practice, yet they sometimes overlap. Let's start with fine art photography. There was a time not so long ago when photography was not accepted as a fine art. Photographers went out of their way to imitate both the look and content of painting, appropriating such genres as the nude, the landscape, the portrait, the still life, and eventually abstraction. The main argument against photography as fine art was that it was seen to be entirely mechanical. Yet not all photographs are created equally. Some photographs appear to be more compelling than others, and some seem truer than others. This fact underlies the main argument in favor of photography as art — namely, that the photographer could have taken different steps to make an image which is more compelling or more true; hence, the medium is not inherently mechanical, but involves plasticity, the artist's hand, vision, and insight. It took a long time for photographers to prove to the art establishment that this was the case, but by the time it had done so, which is arguably the late 1960's and early 70's, the rules of what makes good art had changed. For example, the beauty of the idea in conceptual art had in some circles eclipsed the beauty of the object and the relevance of the artist's expressive hand or imagination.

A picture becomes fine art, rather than a random photograph, when it is accepted by the fine art community, which is composed of a cabal of other artists, gallery directors, collectors, museum curators, and professors in art schools. Nowadays fine art photographers are usually expected to have gone to art school and received a Master of Fine Arts Degree (M.F.A.). Furthermore, they are assumed to be exhibiting regularly or participating in art-related activities. Equally important to being accepted by the community, the fine art photographer must accept that their practice confers value.

There are many poles of production within the fine art photography community. These include contemplative vs. documentary approaches, and hybrid mixtures of the two extremes. Also sometimes the work is more "straight," which is to say relatively unaltered and technically straightforward, and other times experimental. Straight photographers, whether documentary, contemplative, or both, have a greater allegiance to realism and well-crafted technique, with a minimum of manipulation, whereas experimental photographers question these restraints. There is a long history of antipathy between these extremes, but that is neither the subject nor interest of this text. What sometimes unites the extreme approaches to photography as a fine art is an acceptance of the photograph as transcendent, which is to say, transforming what has been depicted— a quasi spiritual transaction that invests both the artist and viewer with a deeper meaning than meets the surface. The photograph in this sense is not meant to be either entirely a mirror of one's inner world or a window of the external world, but to be, at least in part, something boldly new or delicate born into both worlds. This is not so much an expression of ego, as it is a kind of channeling that gets the ego out of the way.[3] It is not easy to put in words because

if words could suffice we would have used them instead of a picture. The fine art photograph is more than information.

Post-modern Photography

Fine art photography did not suddenly end one day and photo-based art appear the next. Indeed, fine art photography persists. The extreme of *eros* in modernism was gradually eclipsed by the *logos* of post-modern practice. This requires quite a bit of unpacking, and shall only be touched upon here. Postmodernism, which arose out of a coalition of theories including Marxist criticism, semiotics, feminism, and psychoanalysis, strongly opposed the production of pretty pictures for their own sake, and regarded them as little more than fetishes. Beauty had become equated with what was perceived by some as an antiquated notion of photographic truth, the alleged irrelevance of an artist's originality, and the insignificance of craft. Postmodernism rejects truth, beauty, and excellence as motivating factors in making art. It replaces these with artworks addressing issues regarding race, gender, and class. In the words of Richard Bolton, postmodern photographic practice involves endeavoring to answer the following questions:

1. "What are the social consequences of aesthetic practice?"
2. "How does photography construct sexual difference?"
3. "How is photography used to promote class and national interests?"
4. "What are the politics of photographic truth?"[4]

Post-modern practice was morphed and reified further by an exhibition at the Metropolitan Museum of Art in New York in 2009 called *The Pictures Generation*. This show included considerable use of *appropriation*, a recycling of other people's photographs to make political and feminist statements, often with neo-Marxist agendas. Many of these artists were considered thieves, and were challenged legally. The idea of borrowing someone else's image and using it as your art through re-contextualization did not hold up in court. However, not all post-modern artists who used photography appropriated images. Indeed, Allan Sekula, who more than anyone used photography to forward his political agenda, started off as a rather mediocre photographer and evolved into a very good photographer. He asked artists, photographers, and image consumers this question: "How does photography serve to legitimate and normalize existing power relationships?... How is historical and social memory preserved, transformed and obliterated by photographs?" Looking back to modernism, fine art photographers like Paul Strand or Aaron Siskind, who were also very left politically, had other interests. They kept their art and politics separate, for they felt these two spheres of human activity served and fulfilled different needs. The mindful photographer is not necessarily apolitical. You need to ask yourself what you have to contribute and how you, not someone else, can best do it — through photography or otherwise.

Photo-Based

Photo-based art is a term invented by the editors of *Blind Spot Magazine*, although the sensibility, lineage, and practice go back much further, perhaps as far as the Dadist artist Marcel Duchamp. He is responsible for the "readymade" art object, which is a re-contextualized ordinary object in an art context. As a kind of "bad boy" gesture, he turned a urinal upside-down, signed it "R. Mutt" and placed it in an art exhibition. Other artists have followed with various appropriations ever since, and this is arguably the beginning of the anti-aesthetic movement, which voiced the opinion that the plasticity of the medium and hand gesture of the artist were more or less irrelevant. The artist only had to say something was art for it to be perceived as art by an accepting art audience. At the same time historically, with completely opposite intentions, a few fine art photographers were trying to legitimize their art by convincing the art community that photography wasn't merely mechanical. Ironically, the idea that a

photograph of an ordinary object could be regarded as art, was probably an influence on Duchamp, who went a step further and simply proclaimed the actual object to be art. Dadism had a lasting influence on pop art, fluxus and conceptual art, land art or "earthworks" (post-minimalism), and the rise of performance art originally called "happenings." Photography was often used by many of the artists participating in these genres as a means of documentation. In the case of some artists, such as Yves Klein, the art event was, at least in part, staged to be photographed. These uses of the photograph differ greatly from fine art photography practice, and are more generally aligned with common amateur and professional uses of photography as a neutral document.

The photographs used by Photo-Based artists are sometimes made by themselves and other times appropriated from the vast storehouse of images ready for the taking from mass culture. For example, Christian Boltanski bought anonymous family photographs at French flea markets, and then used them as readymades in the spirit of Duchamp. He would also sometimes re-photograph the images and throw them out of focus as if the images were meant to connote diminished memories.

Ed Ruscha, and many other artists such as John Baldessari, Peter Fischli and David Weiss, Roni Horn, and Gabriel Orozco saw the photograph not so much as art, but rather as a common cultural artifact that could be used as art. Rather than marvel at how something before the camera was transformed, these artists were more interested in what the camera traced. The photograph points at something other than itself that the artist found interesting, or so it seems at first. This pointing is an index, a type of sign. The observer of the image is expected to accept the photograph as a neutral and unexpressive mechanically produced index. Consider this quote by Ruscha:

"I just use that thing, I just pick it up like an axe when I've got to chop down a tree, I pick up a camera and go out and shoot pictures that I have to shoot. I never take pictures just for the taking of pictures; I'm not interested in that at all. I'm not intrigued *that* much with the medium… I want the end product; that's what I'm really interested in. It's strictly a medium to use or to not use, and I use it only when I have to. I use it to do a job, which is to make a book."[5]

His books of photographs of gas stations, swimming pools, parking lots, and so forth are only glibly interested in the subject matter presented. Rather, his art is academic, which is to say, art about art. He takes the classicist position that art, least of all photography, should be seen as transcendent. In this sense, he is aligned with the proto post-modernist writer Susan Sontag who argued against fine art photography's transformative power. It bears repeating that Ruscha was more interested in the photographic frame as a container of so-called neutral information than a medium capable of transforming what had also been traced by the camera and lens through the mastery of the art photographer. In other words, *Twenty-six Gasoline Stations* is academic conceptual art that politically refutes fine art photography's ambitions, including the very notion of mastery. In response, many years after Ruscha made his book of gas station photographs, the fine art photographer Jeff Brouws took a photography road trip and followed the same route that Ruscha had driven in the hopes of finding what remained of these same gas stations and recording what they looked like now. His motivation was to make a kind of homage to Ruscha, while at the same time asserting a more animated photographic sensibility. His re-photography of Ruscha's subject matter is well crafted, more so than the Ruscha originals. Brouws is also making academic art, yet in the idiom of fine art photography. In other words, he managed to wed the two, so as to say that we live in times where views of what art can and should be are somewhat overlapping and pluralistic.

In a nutshell, Ruscha made photographs about art, whereas Brouws made fine art photographs about conceptual art. Which comes closer to life? Is academic art at all interested in art about life? We need to more deeply investigate documentary photography in the section that follows to answer that question.

It is not uncommon to hear conceptual artists who use photography utter the apology "but, I'm not really a photographer," as if that would be too humble. The idea of practicing photography, not just as a means to an end, but as a mindful activity would be unthinkable from a photo-based point of view. One exception might be photography as performance art, which blurs the distinction between art and life. The idea that the *art is in the looking* is not so far off from the fine art impulse. The practice of contemplative fine art photography accepts that mindfulness is necessary to see the world clearly, and transform that seeing into something new.

Photo-based artists often exhibit their work side by side with painting and other media, whereas fine art photographers usually exhibit in spaces reserved exclusively for fine art photography.[6] This is changing as the distinctions blur and vanish.[7] Unfortunately, it is difficult to validate oneself in the art community without making extreme statements and taking radical theoretical positions. Still, the mindful photographer does not need to actively seek fame, praise, and gain or bark loudly to a big audience. The quiet voice is satisfied with the gesture of sharing to whoever wishes to listen.

1 The author is referring to well-crafted nature photography.

2 The work of Nan Goldin is a case in point. As she gradually sobered up, her technique improved. Ironically, the earlier, more primitive work still gleans more critical acclaim, perhaps due to its rawness.

3 It is like "a bell ringing in the empty sky," the title of a classic musical piece for the shakuhachi.

4 Each of these is explored extensively in *The Contest of Meaning*, MIT Press, 1992. One might call this book the postmodern manifesto of photography, 180 degrees from John Szarkowski's modernist manifesto "The Photographer's Eye," from 1966.

5 Ed Ruscha, p. 23 "*I'm not Really a Photographer*," by A. D. Coleman, *The Last Picture Show: Artists Using Photography 1960 -1982*.

6 Another reason might be that you can charge more in galleries that handle paintings.

7 Fortunately, there are several artists who are able to traverse the boundaries of these two poles of photographic art. Foremost among them is James Welling, whose work is not easily pigeonholed or nailed down to narrow visual and conceptual restraints. As former head of the photography department of the art program at UCLA, he, as well as his predecessor Robert Heineicken were extremely influential. He now teaches at Princeton.

Documentary Style

Documentary photography can be thought of as either a genre or a style. Some people regard all photographs as documentary. What do you think? What is a documentary photograph? What does a documentary photograph look like? What kind of subject matter merits the definition of documentary? What is a document? These are questions worth considering. They are not new questions, and many of the answers that follow are not original. The last question is the easiest to answer. A document offers proof or evidence of facts. In *Camera Lucida*, Roland Barthes wrote that a photograph is a "certificate of presence." Photographers mark with light, translate appearances into images, and in so doing trace the phenomena before the lens. In *The Engine of Visualization* Patrick Maynard explains:

"Sometimes we are more interested in subject matter, sometimes more in the image, sometimes equally in both — often in their close relationship. In looking at the photograph we are interested in how the image presents the subject and in how the subject was used to make the image."[1]

Here are some other quotes from photographers that fully support this view. The Hungarian photographer Brassai put it this way:

"The photograph has a double destiny... it is the daughter of the world of externals, of the living second, and as such will always keep something of the historic or scientific document about it; but it is also the daughter of the rectangle, a child of the beaux-arts..."[2]

Wright Morris agrees with:

"There is a remnant of the image in every documentary and the leaving of the document in every image. These inherent contradictions distinguish the photograph and need not be resolved."[3]

Lastly, some wise words from Henry Holmes Smith:

"I have tried to distinguish in some ways, the photograph as fact (the image as witness) from the photograph as artifact (the image as image). Yet both fact and artifact are present in every photograph, and it is only the emphasis — now more of one, now more of the other — that makes any distinction possible. They are seldom in equal balance; probably such exact equilibrium is undesirable."[4]

That being the case, the photographer still has many choices that affect what the picture will look like. These choices transform the subject that is being traced with light. A great photographer such as Walker Evans seeks to transcend the subject. Others have refuted the very possibility of a photograph being "transcendent." In an interview Walker Evans explained his view.

"It's all done instinctively, as far as I can see, not consciously. But after having made it instinctively, unless I feel that the product is a *transcendence* of the thing, of the moment in reality, then I haven't done anything, and I throw it away. Take Atget whose work I now know very well. In his work do you feel what some people call poetry? I do call it that also, but a better word for it, to me, is, well — when Atget does a tree root, he transcends that thing, and by god somebody else does not. There are millions of photographs made all the time, and they don't transcend anything and they're not anything. In this sense photography's a very difficult art and probably depends on a gift, an unconscious gift sometimes, an extreme talent. Of course, there are many extremely gifted and talented people who wouldn't think of operating a camera, but when they do, it shows. You know that runs through all art. What's great about Tolstoi? A paragraph of his describing a young Russian girl is universal and transcendent, while what another author writes on the same subject may amount to nothing much."[5]

In her book *On Photography*, Susan Sontag takes the opposite position. She writes:

"Evans wanted his photographs to be 'literate, authoritative, transcendent.' The moral universe of the 1930's being no longer ours, these adjectives are barely credible today. Nobody demands that photography be literate. Nobody can imagine how it could be authoritative. Nobody understands how anything, least of all a photograph, could be transcendent."[6]

She doesn't explain any of this. Deciding who is correct will help you situate which discourse of photographic practice you participate in. The fine art photographer accepts that a photograph can transcend the subject being photographed, and a photo-based artist such as Ed Ruscha or John Baldessari does not. What about Walker Evans? He is considered to be both a fine art photographer and a documentary photographer. What are we to make of this combination? He preferred to use the term "documentary style," because he understood that just as *realism* is a literary genre, it was equally a visual genre that included photography. This begs us to answer the question as to whether the nature of the medium is inherently documentary or not. This is a position that has been held by numerous theorists including Andre Bazin, Roland Barthes, Susan Sontag, Douglas Crimp, and their acolytes. On the other side of the theoretical fence we have brilliant thinkers such as Joel Snyder and Patrick Maynard. If it is true that all photographs are documents, then if follows that multiple exposures, excessively blurred and out of focus photographs must be included. It is also implied that any kind of subject matter would be acceptable to qualify a photograph for being documentary. None of these examples holds up to scrutiny. When we see a beautiful out-of-focus abstract photograph of a window by Uta Barth we do not think of it as being documentary. However, we do accept that Uta Barth was there with her camera. The image still operates as a "certificate of presence," as Roland Barthes put it.

Another position proposes that a photographer must point his or her camera at the *right kind of subject matter* for the resultant image to qualify as documentary. Ansel Adams asserted that if a photograph "*interprets the social scene*," it generates a documentary effect. This is an interesting position because it suggests that the documentary label hinges on the *intention* of the photographer. Many theorists, such as Allan Sekula and Abigail Solomon-Godeau have argued heatedly that it is not appropriate to classify photographs as art if they were made for other intentions. They are referring to examples such as Edward Steichen's war photographs, Timothy O'Sullivan's geological survey landscapes, and Dorthea Lange's depression era photographs. They would have us believe that these pictures were not intended to be art, and should not be regarded as such now. However, in his essay *Documentary Without Ontology*, from which many of the ideas of this analysis are sourced, Joel Snyder has correctly pointed out that when we make photographs we often do so for *multiple motivations*. Obviously one of those is to make a compelling image. There is no problem in appreciating an image because it is compelling even if we are disinterested in the subject matter, although we would also do well to ask where we draw the line. Allan Sekula's argument against Steichen is an excellent case in point. In his essay *On the Invention of Photographic Meaning*, he scathes Alfred Stieglitz and his legacy for a photograph called *The Steerage*, an extremely well-composed and complex image of different levels of a ship and their passengers. Sekula found it deceiving and cruel to formalize an image depicting the division of class. He argues on the one hand that intention is paramount to not accepting *Steichen at War* as art in one case, and that intention is irrelevant to looking at Steiglitz's *Steerage* as art in a different case. In the final analysis neither intention nor subject matter is enough to constitute documentary value. However, we can say with assurance that when the subject matter is *loaded*, which is to say potentially controversial, we are more likely to get a heated response to an image.

Having disproved arguments such as the nature of the medium, appropriate subject matter, and documentary intention as convincing in any conclusive sense we now turn to the idea of *style*. In a nutshell, we can say that the kinds of photographs that give a documentary feeling display a high degree of *transparency*. That is to say, we look primarily at the content and not at the photographer's craft. It actually takes quite some skill to make a good photograph where the hand of the artist is invisible. *Transparency* is like looking through a window without paying attention to the glass or what's on the glass. In the same way that you probably haven't been paying much attention to the font or formatting of these words as you read, we judge a photograph to be documentary because it carries a sense of authenticity mandated by its transparency. Walker Evans put it this way:

"... As in typography and printing, technique shouldn't arrest you. Something should be said through it, not by it. Your mood and message and point have to come through as well as possible. Your technique should be made to serve that, kept in place, as a servant to that purpose. That does require skill, knowledge and technical ability, and you have to have done the work in order to make it *not* show..."

However, even this is not enough. Many photographs can be thought of as a window to the world without being necessarily classified documentary. Again, there can be multiple motivations of both artist and observer that confuse a clear reading. This can be further confounded through shifting cultural contextualization of the images in question.

As Walker Evans, Beaumont Newhall, Joel Snyder, and others have pointed out, in the end it is *use value* that determines whether or not a photograph

should be regarded as documentary. Its uselessness makes it art. Even a blurry news photograph, nearly unrecognizable, will be regarded as documentary if through the force of context we believe in its authenticity as proof or evidence of fact. More accurately, it will be photojournalistic up until its *newsworthiness* wears off and then it will *become* documentary or art, perhaps even a little of both, depending on who's looking at it. In conclusion, it bears repeating what Joel Snyder had to say in *Documentary Without Ontology*. Indeed, the title is revealing. If a photograph can *become* a document, then it can't inherently be a document. Its documentary nature is empty of inherent existence.

"A documentary photographer is above all a picture maker, and the problems he or she faces are pictorial in nature. We may condemn the photographer for the production of beautiful photographs of what we take to be an ugly aspect of the world (as numerous critics have condemned beautiful photographs of war or urban poverty), but such disapproval, to be moral, rests upon the recognition that the photographer could have chosen other available means to make different photographs. In a very important sense, the photographer does not 'record the facts'; he or she makes documents and the audience accepts or rejects them, that is, confirms or denies the evidence, the documents, support the case, constitute the facts."

Although the referent does not exist independently in an objective sense, still in the final analysis Roland Barthes's statement "the referent adheres,"[7] is hard to refute. Even a staged photograph bears a striking resemblance to the appearances it has traced and transformed. Even an abstract photograph will be seen in a different way from an abstract painting insofar as the viewer will wonder what the photograph is *of*. Photographic media are world related in a way that the other arts can never be.

What can we say about documentary photography conclusively? Only that it must be used as evidence, and that this is best supported by a transparent style depicting subject matter that interprets the social scene.

1 Patrick Maynard, *The Engine of Visualization: Thinking Through Photography* Cornell University Press, Ithaca and London, 1997, p. 289.

2 from *Radical/Rational/Space/Time* by Paul Berger from the catalog for an exhibition at the Seattle Art Museum.

3 from *Photographs, Images, and Words* (originally published in *The American Scholar*, Autumn 1979) in *Time Pieces: Photographs, Writing, and Memory* by Wright Morris, Aperture, New York, 1989.

4 from *The Fiction of Fact and Vice Versa* (1962) in *Henry Holmes Smith: Collected Writings 1935-1985*, Center for Creative Photography, University of Arizona, 1986.

5 *An Interview with Walker Evans* (1971) by Leslie Katz from *Photography In Print*, edited by Vicki Goldberg, University of New Mexico Press, Albuquerque, 1981.

6 from *America, Seen Through Photographs, Darkly,* in *On Photography*, Farrar, Straus and Giroux, New York, 1973 (originally published in The New York Review of Books).

7 This quote is from the book *Camera Lucida*, and is central to the books argument. A *referent* is a semiotic term referring to the subject matter, the thing itself that is later represented. From a Buddhist point-of-view the referent does not adnere in an objective sense because it can always be deconstructed into parts made of other parts opening into space.

Directorial Photography

The term "directorial photography" was coined by A.D. Coleman in his essay *The Directorial Mode* in 1976. However, the practice of directorial, also known as staged photography, goes back to the very beginnings of photography. To direct or stage a picture means to set it up rather than find or discover it. Generally speaking, staged photography lends itself to allegorical and narrative approaches to photography and is preconceived art made after theory. The subject, which is often macabre[1], is manipulated, but not necessarily the print. In contrast, the so-called straight photographic aesthetic is more adaptable to both documentary and contemplative ends. In other words, directorial photography is more like fictional pros, whereas contemplative straight photography is more like poetry. The directorial approach is additive, which is to say you start with an empty frame and then you add and arrange within that confined space. This can be accomplished in the studio. People who are obsessive about control feel very comfortable there. They may very well work with a team of assistants whom they direct. Straight photography is subtractive in that you start with the whole world and then frame a little part of space along with a thin slice of time. This involves going out into the world and exploring and requires a considerable degree of chance and openness to what presents itself to mindful awareness. Straight photography is an individual art, a solo endeavor. A third, hybrid approach is to explore a site and then stage a tableau within that location setting.[2] This is the dominant method of cinema.

Up until the 1980's staged photography was seldom accepted as fine art because it did not conform to the principles outlined by John Szarkowski in his formalist manifesto of photography, *The Photographer's Eye*. As photography curator for the Museum of Modern Art in New York, Szarkowski wielded considerable influence. He was not alone in his criticism of staged photography. A. D. Coleman, the first person to ever earn a living as a photography critic, was of a different opinion, and wrote in the *New York Times*:

[Paul] "Strand and others, both here and abroad, were persuaded that different media were much like sects, to whose dogma practitioners should hew closely, and that a medium was best defined by its inherent and unique characteristics — those aspects which were shared by no other. Curiously, they did not consider photography's almost infinite adaptability to any style of expression as such a characteristic, but settled instead on the related (though not identical) qualities of sharpness of focus and realism. And, as purists tend to do, they made of these qualities not merely stylistic choices but moral imperatives."

A good example of this kind of moral damning of directorial photography can be read in Robert Adams' essay *Beauty and Photography*:

"A photographer can describe a better world only by better seeing the world as it is in front of him. Invention in photography is so laborious as to be in most instances perverse."

In *Camera Lucida* by Roland Barthes we hear another echo of these sentiments:

"...the Photograph is indifferent to all intermediaries: it does not invent; it is authentication itself; the [rare] artifices it permits are not probative; they are, on the contrary, trick pictures: the photograph is laborious only when it fakes... Photography never lies: or rather, it can lie as to the meaning of the thing, being by nature tendentious [calculated with purpose], never as to its existence.... Every photograph is a certificate of presence."

Directorial photography photography became prevalent and accepted as something not quite fine art because it disavowed the values of modernist

photography, yet also failed to qualify as photo-based art in that the print as object was still important as more than a mere index. Whereas straight photographers usually worked small, black and white, and window-matted their prints, directorial photographers made their prints big, in color, and frameless. Surprisingly, with the advent of directorial photography's rise there was a new renaissance in the use of large format view cameras allowing the images to be blown up to the size of paintings. Staged photography went from the advertisement to the museum in a very short time. On the negative side, the work was too often just the illustration of an idea. The best was the continuation of a long history of allegory in art, the interpretation of a story, poem, or picture to reveal a hidden meaning or support a progressive political agenda.

1 From the very infancy of photography, starting with Hippolyte Bayard's *Self-portrait of a Drowned Man*, and continuing with the work of Henry Peach Robinson, Oscar G. Reijandler, Julia Margaret Cameron and other Pre-Raphaelite photographers, F. Holland Day, William Mortensen, there was a prevalent interest in staging death scenes. This continued with the rather Goth sensibility of Cindy Sherman's rotting corpse fake self-portraits, the Spielbergesque early work of Gregory Crewdson, and the Neo-Pre-Raphaelite allegories of Tom Hunter.

2 Many of the photographers that rose to fame in the 1980's and 90's, such as Cindy Sherman, Jeff Wall, and Gregory Crewdson worked either hybrid or in the studio.

Image, Text and Narrative

Some of the best staged work has been by fine art photographer Duane Michaels, done well before directorial photography became hegemonic. His work does not disavow a mindful and open approach and goes beyond the mere illustration of an idea, employing humor, insight, and self-discovery in the service of story-telling. Duane Michaels is also adept at in-camera multiple exposure on film, giving his narratives a dreamlike quality. Indeed, one of his books is titled *Real Dreams*. He was not afraid to wander into the world of erotic imagery — always tastefully and never homophobic. His interest in Zen Buddhism comes through in much of his photographic work, especially the book *Now Becoming Then*. Sometimes a mere title is enough and other times his work is supported with a significant amount of text. As has already been mentioned in this manual several times, the reason for this is that photographs are the best and most detailed means at showing, whereas words are more precise at telling. So if you wish to tell a story, as is the case with narrative photography, you usually need to add words. Peppered throughout his writings Roland Barthes identified three ways to do this: *anchorage*, *relay,* and the *third meaning*.

Anchorage

In Roland Barthes structuralist phase in the essay *Rhetoric of the Image* he identifies two ways of using text with photographs: *anchorage* and *relay*. Concerning the former he says that the text clears up confusion about what is being denoted.

"[It] permits me not only to focus my gaze but also my understanding; it guides interpretation of the symbolic message contributing a kind of vice which holds the connoted meanings from proliferating…"

He goes on to say:

"Anchorage is a control, becoming a responsibility — in the face of the projective power of pictures — for the use of the message."

His language is difficult, so let's unpack that a little. The term *anchorage* refers to a caption or title that clarifies or changes the meaning of a picture or sequence of pictures. It tells you specifically what in the picture you should look at and what you should think about it. For example, a newspaper caption identifies what is happening in a picture and often adds an editorial spin. Similarly, yet with a shifted emphasis, in a school textbook an image is little more than the adornment of a text. Anchorage was employed by post-modern artists such as Victor Burgin and Allan Sekula who combined text and image. In their theoretical universe the linguistic message was considered to be superior to the visual and consequently picture makers found themselves in an underprivileged position.

Relay

Barthes identifies *relay* as the use of text to read out messages which cannot be found in the images themselves, such as with film dialogue or comic strips. The words do not clarify something that is there in the image, but rather adds something that isn't there. Often we see anchorage and relay combined, such as at the Getty Museum, where the little signs and labels hanging next to the pictures tell us what to look at in the image and what it means historically.

The Third Meaning

The third meaning, which Barthes explained in *Empire of Signs*, plays text and image off each other to fashion a new meaning neither would have had alone. Here text and image have an equal status, not unlike a Zen painting with calligraphy. Barthes explains:

"The text does not 'gloss' the images, which do not 'illustrate' the text. For me, each has been no more

than the onset of a kind of visual uncertainty, analogous perhaps to that *loss of meaning* Zen calls a *satori*. Text and image, interlacing, seek to ensure the circulation and exchange of these signifiers: body, face, writing; and in them to read the retreat of signs."

To be sure, Barthes is writing about a literal "loss of meaning," that is to say, a meaningfulness not bound by essentialism and reification. It is in this *third meaning* where today's artist can find much unexplored poetic territory.

Text As Image

There is a fourth way that words and photographs can be unified that is seldom if ever mentioned, and that is to take pictures of words. Walker Evans, John Gutman, Dorthea Lange, and William Christenbery are just a few of the many photographers who have explored this theme in depth through their photography of signage. We might call this type of photography, for lack of a better term, *Text as Image*.

The use of anchorage, relay, the third meaning, and text as image do not necessarily guarantee a good story. Usually several pictures need to be sequenced not unlike a storyboard used for constructing a film sequence. This is an art in itself. As with good writing, usually the fewest number of well-paced and sequenced pictures combined with the fewest words possible deliver the most satisfying result. Your audience will eventually lose their patience if you use too many printed words on a gallery wall or in a slide show. The photographic book is an ideal vessel to structure a narrative with words.

The Photographic Book

A photographic book is composed primarily of photographs rather than words, although it will inevitably contain both. The photographic book is as much about the qualities of the pictures as what the photographs represent. The photographic book is an alternative to the gallery for the artist. The most obvious but never acknowledged thing that distinguishes a group of images on the wall from a sequence in a book is that the former can be seen all at once in a glance, whereas the classic book structured in a western codex is seen as an entirety only in memory. Only one or two pages can be seen at a time. Not all books are structured in a western codex. Other possibilities include accordion (oriental fold book), venetian blind (with or without connecting strings), the scroll, a fan-like structure, and children's pop-up books. Hand-made books can be produced without glue. Four four-hole binding and other techniques are easy to do once you learn how. It is even possible to make a six-page "instant" book or zine by simply folding one large piece of paper and making one cut in it. Hand-made books can be made with a minimum of simple tools, such as an awl or hold punch, a bone or bamboo folder, a cutting mat and cutting tools, a binding needle and thread, and a ruler. Alternatively, digital print-on-demand books can be produced exclusively on a computer with a number of software choices, both free and costly. Artist's book fairs hosted by organizations such as *Printed Matter* in New York, Tokyo, Los Angeles, and elsewhere have given a place for many unknown artists who would otherwise have been marginalized by the elite gallery marketplace a venue to share and distribute their work. A book is a very personal. It is portable, and much more long lasting than the typical two to four week run of an exhibition. Moreover, for the poor artist who cannot afford to spend thousands of dollars to frame their work for a single exhibition with the hopes of maybe selling one or two prints and breaking even, the artist book is financially within reach.

Although the book is an excellent form for a narrative sequence, the vast number of photography books do not exist to tell stories. Some examples of types of photography books are travelogues and visual diaries, while others operate as sculpture and installation, rare object, conceptual art, document, and "democratic multiple," which is to say a so-called affordable limited edition.[1] The urge to make a monograph of your own is often tempting, but it should be resisted. A monograph is a collection of your most important work, perhaps together with some examples of formative work from your early years as an art photographer. As such, a monograph is a kind of honor that is bestowed upon artists when they have been publicly recognized in a particular discourse. This is not to say that the artist always deserves to be recognized, and that the machinations of corruption never play a role in legitimizing artwork, but that is another discussion. However, there is no problem in making your own books and putting your own work out into the world in structures other than the "best of" variety. Indeed, there is a long tradition.[2]

The photobook as diary, scrapbook, or personal document is an opportunity to slow down and look at your life in such a way that you use the process to both learn about yourself and open up to others. The German critic Siegfried Kracauer pointed out long ago his misgivings about the relationship between photography and memory. Before photography, memories were primarily connected to significant moments in our lives, sometimes traumatic or ecstatic moments. Yet now any insignificant mundane moment can be preserved in perpetuity. With the photobook you have the opportunity to organize significant moments, and create gestalts and sequences of those images together with text. How can you recreate a past without making fiction? Is it possible? The picture of a lover means one thing now, another thing after the breakup. In fact, the

amount of meanings depends on how many people are looking.

If one uses the photobook as an ongoing journal, as Dan Eldon did in *The Journey Is the Destination*, then it can serve as an index to help you remember in later years where you were along the path. Sadly, it didn't for him due to his untimely death in Somalia, but it did give his parents and friends a way to share his enthusiasm to help others. You might be asking yourself, "Why bother documenting my boring, uneventful life?" Rest assured, for someone out there your life will seem extremely exotic, and at some distant stretch in the future you will be grateful that you have a document that chronicles the life that was. All things are impermanent, and photography is one of the best ways to preserve evidence of that which is no more.

As a book artist you must begin by assembling and then limiting a group of images. There is more to this than one might initially expect. The great Bauhaus artist Lazlo Moholy-Nagy was one of the first individuals to voice his thoughts about this. In 1936 he wrote with utopian fervor:

"There is no more surprising, yet in its naturalness and organic sequence, simpler form than the photograph series. This is the logical culmination of photography / vision in motion. The series is no longer a 'picture' and the canons of pictorial aesthetics can only be applied to its *mutatis mutandis*. Here the simple picture loses its separate identity and becomes a structural element of the related whole which is the thing in itself. In this sequence of separate but inseparable parts, a photographic series – photographic comics, pamphlets, books – can be either a potent weapon or tender poetry. But first must come to the realization that the knowledge of photography is just as important as that of the alphabet. The illiterate of the future will be the person ignorant of the use of the camera as well as the pen."

Moholy-Nagy uses the terms *series* and *sequence* interchangeably. It is important to note that the dictionary also uses series and sequence interchangeably, each word having multiple meanings and uses. Photography teachers need to try to at least attempt to define these words in terms of possibilities of how meaning can emerge from organization and structure.

To say that something is a "group" is to say that each element is not completely arbitrary, that there is a thread of similarity, something that binds the individual parts either thematically, technically, conceptually, or more likely all three. A group of images that are infused with the sort of continuity just described is commonly called a series. If the group lacks these threads of continuity it is more appropriate to call it a collection of greatest hits (or misses), and not a series. Generally, a series need not be organized into a sequence, although it can be ordered. However, if the sequence tells a story it would be more appropriate to call it a *narrative*.

There are ways of ordering pictures on the wall of a gallery that differ from organizing photographs for a slide show or a book. Each presentation demands a different strategy. A gestalt of images arranged on the wall in a grid is typically called a typology if the group depicts consistent subject matter photographed and printed in a formulaic manner calling attention to the variations. This is more difficult to do in a book only insofar as the images become very small. If a group of photographs is presented salon style, arbitrarily filling the entire wall without a grid, and all the images are dissimilar except insofar as they are photographs, then it is not a series or a typology. This is seldom done in book form, and usually in a less crowded manner if it is. The work of Masao Yamamoto is a worthy example. Another option is to arrange images in a line. This has proven the choice most favored by artists hanging in galleries. The question is how to arrange that line.

In a gallery the architecture of the space must be taken into account. The gallery director should work together with the artist to install the work. A wall is seldom left blank as a page often is in a monograph, however, a single wall might only support one photograph. You start with one image on a wall, and if it is big, maybe leave it at that. As soon as you add a second, third, fourth, and fifth image the impact of the first image changes through the power of context. How the images are framed and whatever other installation adornments surround the work also plays an important roll insofar as frames either attract or insulate meaning.[3] In a book, such a display is rarely anything other than a document of the installation.

Suffice it to say that the book is an entirely different space from the gallery to organize images. One can leave it on a table or hold it one's hand. It can be carried from room to room, and the lighting conditions of how it will be viewed are up for grabs. It can be tiny or large. One can start at the beginning and turn each page slowly in consecutive order, but one can just as easily start three-quarters from the end and quickly flip the pages backward, giving each image less than a second of attention. One can also jump around the book randomly. This is not so with the slide show. It moves in a defined sequence and pace set by the artist.[4] In the book form we have the option of anchoring the meaning of the images by including text and captions and pacing images. We begin with the enormously slippery assumption that the reader starts at the beginning and ends at the end. We have no choice but to impose some sort of structure on the book. We need to begin somewhere. In Japan, that would be at what we here in the occidental world call the back. Our structuring is in many ways hinged to the reading conventions of our culture. If we read text from left to right, and top to bottom, as we do here in North America, Europe, Latin America, and many other places, we must take that into account when organizing images. If we read from top to bottom and right to left, as they do in Japan, then we need to consider that when organizing images. The most important thing is that we understand that we do have a choice what to include and what to leave out, and how to order what we decide to include, and that the particulars of those choices matter.

The best book designs are usually invisible.[5] Sometimes designers overdesign books and other products, although this is usually preferable to not giving it any thought at all. There is no one-size-fits-all design strategy. As in architecture, the saying "form follows function,"[6] can be applied to book design. In the instance of the photographic book, first the content will take center stage, followed by the sequence, followed by the amount of white space, the choice and size of text and font, etc. If at all possible, don't leave the ordering of your images up to someone else. Unfortunately, we are not always given the choice. This is an advantage that independent book artists have. Once you start working with the big publishers, or even moderately sized ones, then a lot of money is at stake and you would probably be asked to sign-off on any number of key design elements such as size, placement, whether to bleed the images to the edge of the page or give them a white border, and also on leaving blank pages. Moreover, publishers often have a style in the sense that all the books for a particular publisher share a particular look. In any event, the book will become a collaboration and your opinion will be just one in many, no matter how generous the publisher is. The artist's book, however, is something you can do entirely on your own without the need to compromise.

For print-on-demand books you have several choices You need to either create a pdf using Adobe InDesign or Quark xPress, or otherwise create a layout in Adobe Photoshop, or work with the software provided for free from the online publisher. Adobe Lightroom is also an excellent means. It is possible to do part of the book using something like Blurb's Booksmart software and part using Photoshop. Regardless of which platform you choose, one of the most important questions you will need to make is

the typeface. Which font works well with the photographs you are presenting? Are they classic, modern, sleek, rough, goofy? Pick something that matches in some sense the feeling of the work. Alternatively, always use the same typeface for everything, thereby creating a certain look you wish to be associated with. ECM records does this quite successfully with its album and CD covers.

Paper should not be arbitrary. With print-on-demand books cost will be a major determining factor. It is recommended to invest some time into looking at what alternatives are available. In terms of inkjet photographic paper that is appropriate for handmade books, this search might entail going to a big camera store and looking at a lot of sample books, taking notes, buying sample packs and trying them out. The whiteness or creaminess of a particular paper, together with its texture or lack thereof, its thickness, archival quality, and cost will be major determining factors for the independent book artist. You may not know what you want until you see it and touch it, but if you do know what you want from the get-go, the internet is an amazing resource. In the age of Staples and Office Depot we should endeavor to keep the little companies afloat whenever possible. The alternative is a waning number of choices awaiting artists of the future.[7]

Photography books have become collector's items in recent years. For a student, the prices are challenging, but starting a collection can be a good way to establish a sense of lineage that you wish to further. For a teacher, photography books are excellent resources and a good capital investment. Photography books are rarely printed in editions of over 1000 copies, and usually less. Many books will increase in value many times over their original price. If you have the space for a collection of photography books, it is better than money in the bank. Of course, this is not the primary reason to gather a personal library, but rather to encourage and feed your passion for photography. Collecting photography books is also a way to support like-minded individuals in the world who are engaging in projects that you admire. Sometimes you see a book based on an idea you might have also considered, yet enlarged into a meaningful body of work in a way you may never have imagined. We all find different ways to connect to the practice of photography. This may help you to feel part of a community of artists most of whom you have never met. Visiting gallery exhibitions also contributes to that sense of belonging. If you cannot afford to buy books, no worries; browsing in serious independent bookstores can help you keep in touch with the changes in photography as an art. Most of the photographic art we will ever encounter will be in the form of a photography book, not an original print.

1 The idea of the democratic multiple is really a myth. It is very expensive to produce a limited edition of 100+ copies unless the book is very cheaply made.

2 See Joanna Druker, *The Century of Artist's* Books, Granary Books, New York City, 1994.

3 The Christmas lights surrounding the photographs of Christian Boltanski stacked altar-like are a case-in-point.

4 Both screen savers and the random slide shows in art installations by Brian Eno are an exception due to their use of chance built into the viewing structures.

5 An invisible design is more or less equivalent to the idea of *transparency* in documentary *style*.

6 This aphorism is originally attributed to the architect Louis Sullivan, and was popularized by his famous student Frank Lloyd Wright.

7 *Hiromi Paper* in Santa Monica is an excellent resource. Also, art, craft, and stationery supply stores offer a number of options we should consider.

Portrait Photography

Portraiture Goals

It is important to be clear about why you want to make portraits. What follows is a brief list of possibilities and recommendations:

— To respect the subject, and earn the subject's respect.
— To participate with the subject.
— To honor your family, friends, tribe, community, and heroes in pictures.
— To understand, recognize, and skillfully peel away the mask for a moment. (Is it possible?)
— To acknowledge the limits of a single picture, and to endeavor to go beyond those limits.
— To open the space of vulnerability, supported by trust, so as to picture the private, rather than public face.
— To playfully imagine a subject into being.
— To tell the truth as you see it.
— To know your equipment so well that using it becomes second nature.
— To make the event of taking a picture hold the magic of a beginner with the skill of a master.
— To be careful not to let photography become a big deal.
— To not impose your goals on others.

The word *portrait* comes from the Old French *portraire*, meaning to *portray*. It eventually came to mean a painted image of someone in the nobility, but now it can be a portrait of anyone. Thousands, if not millions of portraits are made everyday. Broadly speaking, a portrait is a picture of a person. However, this is not always the case. For example, sometimes photographs will include people, but the picture is clearly more about a place or event than it is about or of a person. Generally, when we say we want to have our portrait done we are not talking about a snapshot. However, that too has passed into question. The snapshot aesthetic is often the most immediate, poignant, and believable source of portraiture. In attempting to define what a portrait is, we are left with a number of questions. Must the subject be self-conscious or can the image catch them off-guard or candidly? How close can the photographer be to the subject? In other words, at what distance does the portrait's social function become negligible? Can a photograph of just skin be a portrait or an image of a person standing distantly in a landscape? Does the context matter?

Consider pictures of people without clothes. Are all such photographs portraits? How do we distinguish a photograph of someone who is simply naked from the nude? When does an image pass from being erotic to being pornographic? These sort of distinctions should be considered.

What are the uses of photographic portraiture? The function of most portraits is vernacular. First and foremost, portraits *identify* individuals. Is a mug shot a portrait? Twenty years or so ago the answer would have been no, but nowadays the answer is less clear. The mug shot has become an aesthetic with the work of Thomas Ruff and others. Portraits represent individuals in their absence. Portraits can be great objects of devotion or idolatry. Portraits are supports for memory. Portraits can be both descriptive and expressive. In other words, they can represent not only the appearance, but also reveal the emotion of an individual. Portraiture can give the viewer freedom to stare for a very long time. The subject of a portrait can remain a subject, but can also become a motif, an object. The word *objectification* refers to a subject who has been made a victim by the photographer or publisher, void of character and human dignity. None of these ideas are new.

What types of portraiture are there? What follows is an attempt to sketch a general picture of this genre.

The Self-Portrait

On one extreme the self-portrait in photography is an act of vanity, narcissism and indulgence. On the other extreme it is a search for self-identity. Sometimes, it is not clear where the photographer is coming from. Why? Photography works with appearances, but the self-portrait is often implying something beyond appearances. What is the self? This is a question that has been asked since ancient times.[1] Think about how you would answer this question and the ones that follow. How can I picture myself in such a way as to reveal more than my appearance? How can I picture both my strengths and frailty? What qualities and private secrets about myself am I willing to make public? What aspect of my self do I want to focus on? You are many things: a son or daughter; perhaps a brother or sister; maybe a husband, wife, or significant other; a Christian, Muslim, Jew, Hindu, Buddhist, Taoist, agnostic, or atheist. You are an artist, photographer, perhaps a poet, scholar, musician, cook, bodysurfer, Californian. How do you wish to present yourself? As a lover or scholar? Is your sense of self what you pretend to be, or what you really are?

You can also use the self-portrait to tell a lie about yourself, or to tell a story. Sometimes in directorial photography it is easier to use yourself as the model than to hire someone. There has been a long history of self-portraiture dating back to the very beginnings of photography.[2]

The Studio Portrait

The studio photograph goes all the way back to the Daguerreotype. At first, anyone with initiative and a bit of capital could set up a studio as a photographer. However, by the end of the Nineteenth Century the portrait studios had by and large been set up in such a way that the operator of the camera was seldom the owner. Furthermore, most employees in a studio would never get the opportunity of rising to the status of operator. Studios were big business. With the invention of roll film and the Kodak Brownie camera the need for studio photographs greatly diminished and the big studios began to shrink in size and numbers. Originally, studios mostly did portrait work. Nowadays, studios house photographers who focus on product advertising, fashion, etc. Since the early nineties many photographers have given up their studios in favor of renting temporary studio space when they need it, due to the high cost of rent in big cities.

Studio work is an additive process. People who like to be in total control often do well in the studio. People involved with photography because they like to explore and work with chance tend to not enjoy the confines of the studio experience. The type of person you are, combined with the sort of images you wish to make, will greatly influence your work in the studio.

There are a number of lighting strategies that deliver specific repeatable results. The studio photographer should learn these directly from a teacher. These include direct, diffused, and directional diffused light in artificial conditions. Quality of light must be distinguished from quantity of light. Side-lighting, Rembrandt (high key) lighting, butterfly lighting are standards. The type of lighting strategy you choose for your subject will be determined by the specific contours of the face of your subject, coupled with the emotional affect you wish to generate, such as harsh or soft. Some people have one side of the face which is favorable. You should spend some time looking at your subject and discussing the purpose of their portrait before deciding on a specific lighting set-up.

Usually, the less lights you use, the better. A sure sign of an amateur studio portrait photographer is the appearance of a double shadow, meaning two shadows coming from two lights. One light must always be dominant, and this is called the *main* or *key* light. The most direct light will be very bright, small, and far from the subject, not unlike the sun in the sky. When you wish to have extremely harsh lighting this is the only light necessary. To soften the overall effect a bit you can add a reflector to bounce some of the main light back into the shadows. If you wish for the light to be softer then you need to place a soft box over the main light to diffuse it. The bigger the soft box is, combined with moving it closer to the subject, the softer and more diffused the light will be. Another option is to use an umbrella together with your main light, which will diffuse and spread the light broadly. If you wish to soften the light further it will be necessary to add a second light called the *fill* light. This light must be placed as close as possible to the photographer on the opposite side of them as the main light. By placing it close to the photographer there is less chance of the appearance of a second shadow. The brighter the fill is, the softer and less dramatic the overall effect. A dim fill light diffused with a beauty dish will add more light than a reflector, yet still allow the photographer to model the face with light to emphasize the subjects most attractive features. The difference in intensity between the main light and the fill light is called a lighting ratio, which can be measured using an incident hand held flash light meter. Lighting rations can range widely. A 1:1 lighting ration is when the main light and fill light are equally bright, thereby eliminating nearly all shadows and producing double shadows. This is a bad idea. A 2:1 lighting ration is when the side lit by the main light is two times brighter (1 f. stop) than the fill light. This will result in very light shadows. A 4:1 lighting ration is when the main light is four times brighter than the fill (2 f. stops), causing a much more dramatic image.

A 8:1 lighting ratio is when the main light is eight times brighter than the fill (4 stops). This will result in shadows with little or no detail and an extreme high contrast tough looking picture, useful for a punky, whisker revealing look. Common lighting rations are generally 3:1 or 4:1. It is not necessary to re-invent the wheel when it comes to studio lighting. These techniques have proven reliable and repeatable. Back in the days when most studio photography was done with film, it was common to make a test with a Polaroid back, giving both you and your sitter an idea what the camera was seeing rather than what you imagined it was seeing. Nowadays with digital photography with cameras tethered to a computer we can get immediate feedback. Still, it is a good idea to have a mirror in the studio and look at your subject through the mirror, as this will be more akin to what the camera sees than the naked eye.

In addition to some of the equipment already mentioned, there are countless accessories available to the studio photographer. These include items like *barn-doors* and *diffusion screens* that can be placed over the lights to direct and scatter the light in various directions. There is the *snoot*, which is like a tube that will direct the light to a more confined space. Generally, you will need to attach some kind of reflector over the light. These are usually bowl-shaped. The larger the reflector, the wider the light will be spread. For each light you will need a light stand. If you wish the light to hover above the subject, then it will be necessary to attach a *boom* to the light stand. This is essential for butterfly lighting, often used for glamour.

Lights will either have their own built-in power system or they will be attached either with or without a cable to a main light power box. The bigger they are, the more powerful they are, the more expensive they are. If you have the good fortune to use a power source with an adjustable intensity, this will make finding the appropriate lighting ratio much easier.

It is incumbent on the photographer to always be aware of their background. In the studio, this is something you deliberately set up and control. You can use textured fabric or seamless paper on a special background stand. The paper can be white, gray, black, or colored. You can add a third light, or perhaps two more lights to the background to control exactly how bright it is, and whether that brightness is even or a spotlight. If you wish to include a shadow from the subject to be cast on the background, then the subject must be fairly close to the backgound. Otherwise, be sure to leave considerable space between the subject and background to avoid a shadow. Needless to say, the wider the background the bigger the space, and the higher the ceilings the more flexibility the studio photographer will have.

It is best to get a hands-on demonstration directly from a teacher to learn how to set up, operate, and break down all of this equipment. There are a number of other tools that can be used in the studio, but these are not directly applicable to portraiture. These will be addressed in the following section of this operating manual on studio lighting.

Studio lighting is additive, meaning you start with a dark room and then add light. However, there are hybrid situations, such as a studio with large windows or a skylight that opens and closees. This is not an unusual situation. There also exists another approach to on location shooting which offers a lot of control, but is not additive, called *The Cage*.[3] It is easily transportable and can be set up by two people in less than half an hour. Basically, instead of adding light, you start with the existing light and subtract and modify it. Each wall of *The Cage*, as well as the ceiling, can be set up with various types of opaque or semi-transparent material, or be left completely open. With the addition of large reflectors this can produce beautiful light in what is essentially a transportable, electricity free studio. Working in this way, however, does require a relatively significant capital investment and the use of assistants. In any event, its good to know the option exists.

The Casual Portrait

It is not always possible to bring someone into a studio to have a portrait taken. You must learn to be flexible and work in a variety of circumstances. If you can work in surroundings that are familiar to the subject, they will more easily be at ease and receptive. The casual portrait is a portrait that is posed, yet private, and intimate, that is to say more informal than the studio portrait. It should not be candid. Work with available light, be it daylight, tungsten, or a combination. Alternatively, use a single light with an umbrella and possibly a reflector.

Generally speaking, people don't have a lot of time for a portrait on location, so be ready to work fast. If possible, meet your subjects ahead of time. Get to know their looks and interests. You may need to brainstorm an appropriate background and setting based on the quality of light that is available. Usually, directional-diffused lighting will be the best. This can be accomplished by placing the subject near a large window or skylight. Outdoors on bright overcast days is also quite good light for portraits. Be careful if you work in the shade with a bright background, especially in color. Usually, it won't work well. If possible, shoot in more than one setting. Encourage appropriate clothing for whatever lighting situation seems to work best. Avoid white shirts in high contrast light.

The subject will not be able to relax in front of the camera unless they trust you. Do whatever you can to instill this feeling. Some subjects will still be paralyzed with self-consciousness. Engage the subject with conversation. Give directions, but be prepared to take directions or advice from high-profile subjects who have a definite idea of how they want to be portrayed. Actors or people with big egos are often this way. If they want to be in control then by all means let them direct, but don't be a weenie. Learn to be flexible and playful with the situation. The lifelong work of Christopher Felver, who specializes in photographing poets and musicians, is an excellent example of causal portraiture.

The Clinical Portrait Aesthetic

A clinical portrait is a picture that pretends to be objective, like a grandiose mug shot. This generally requires a blank background. What does it mean to use a stark white background and include the black border of the film's edge? A white background gives no information. It seems to be a neutral zone in front of which a subject emerges, or rather falls into, like a hole of sorts. One must use at least two powerful strobes pointed at a roll of white seamless paper, that measure on a light meter two or more stops more brightly than the subject to achieve the desired effect. The point is that it is an effect — it is not objective. The neutrality of the white creates the illusion of objectivity which is furthered by the inclusion of a black border, suggesting that nothing has been cropped. In actual fact, such images are highly manipulated. This technique was popularized by the fashion photographer Richard Avedon. When Avedon photographed *The American West* portraits he used a white background and black border, but what we don't see is his use of the back tilt of his view camera to slightly shrink and enlarge the heads of his subjects. He presents us with a freak show, and in all likelihood that is what he intended to show from the onset of his project. It has been suggested that he most probably knew what he wanted before he crossed the Mississippi. He was not an explorer. There is no question that he exploited his subjects, yet it also goes without saying that the images are both popular and striking. They give an elite audience the opportunity to gloat at the common man. Yet Avedon's Western folk are not the common man as portrayed by Charlie Chaplin or Pablo Neruda, but rather just a bunch of stupid working people who look no less than savage in their strangeness. This is not honorific portraiture in any sense — it is not respectful, even as it is powerful and remarkably crafted. Like Diane Arbus, Avedon thought that if commercial photography and beautiful people equals fashion, then art photography and gritty ugliness equal honesty. This is false.

The black border came into popularity in the 1970's at a time when many art photographers were deliberately overdeveloping their film and getting very high contrast pictures. Consequently, white skies bled into the white border of the picture. The black border helped contain the image. Also, we should not forget that black borders are still used today in obituary photographs. They signify, among other things, death. Many photographers have copied the look of Avedon. The use of the white background, black border, and direct frontality of the subject is now commonplace. The most recent European incarnation is the collaborative work of Ari Verslus & Elie Uttenbroek. They work in color and collect types, almost as if their studio were an assembly line. In a sense they seem to be combining the typological interest of August Sander, with the psudo-objective style of Richard Avedon. By presenting several images in a grid, the idea of objectivity is amplified, and the viewer cannot help but to compare the subjects. One leaves impressed with their effort, yet at the same time depressed that anyone nowadays, including oneself, can be reduced to a type largely in relation to one's taste in clothing. The work functions as a kind of deconstruction of fashion, but like much deconstruction is void of compassion.

Rineke Dijkstra is another photographer that isolates her subjects clinically, although not always in the studio. Some adjectives used to describe Dijkstra's work are sharp, plain, vacuous, unnerving, stealthy, strong, bold, intelligent, and unsentimental. She often photographs people in a state of exhaustion. Not a bad strategy, and certainly an original one for capturing unselfconsciousness before the lens. Her pictures speak of neither hope nor fear, yet at the same time they seem unenlightened. They are cold, and thus striking in their seeming honesty. Her style is minimal — she gives us only so much information, not too many details, never more than we need. The result is engaging.

A recent article about Thomas Ruff's portraits begins with the question "Does a portrait without identity

still have value to us as people?" Later in the article we read in bold letters "They're neutral and friendly, like Buddhas. They're vessels you can fill with all of your wishes and desires." The sitters were instructed to hold back any emotion before the lens. Here we see, or rather don't see, the wish of the photographer to look in the face of a surveillance society and say no, we will not play along with it. The results are giant mugs in splendid detail. They function as a collection of nameless young adults that tells you nothing, but invite questions and projections. Ruff's photographs embody a negative reaction to sentimentality.

The Extended Portrait

The extended portrait is a tradition of portrait making in which the subject is photographed over an extended length of time forming a portfolio of images which constitute a body of work. All the pictures taken as a whole are then considered to be the portrait. Some examples come to mind: Alfred Stieglitz and Georgia O'Keefe; Harry and Eleanor Callahan; Emmet and Edith Gowin; Sally Mann and each of her children; Seichi Furuya and Christine Furuya-Gössler, and Matthieu Ricard and the Tibetan Lama Dilgo Khyentse Rinpoche. An extended portrait is a collaborative effort with that person. In other words, you get them actively involved in the project rather than just a passive victim of the shoot. The series as a whole will tell us more about that person than any single photograph could have ever done alone. There is an art to portrait making, but unless the portrait is candid the subject of the portrait is equally its creator and deserves equal credit. One photographer even went so far as to suggest that *both* the photographer and the subject of the portrait should sign the finished print.[4]

Most people are complex personalities who change not only through time, but from moment to moment. This being the case how can a single portrait represent the essence of an individual? The best we can really do is try to show the spirit of a person as clearly, compassionately and truly as possible, even though the spirit is something immaterial and intangible. In other words, if we are good photographers we try to do the impossible.

Documentary Portraiture

When a photograph which includes a person is more about the life and times of that person than the actual individual, then it is probably being used as evidence of some sort. In much of Twentieth Century portraiture the name of the individual disappears to be replaced by types and icons. There are, however, notable exceptions such as Walker Evans' *In Praise of Famous Men*. There is often, although not always, a humanist agenda attached to documentary portraiture. In addition to it's use, what distinguishes the work as documentary is the insistence on a social framework around the work. For example: August Sander's monumental project *People of the Twentieth Century*, a collection of types arranged according to work and social hierarchy. Other examples include Lewis Hine's photography which was dedicated to end the exploitation of working children; Paul Strand's stiff and eloquent depiction of daily life in an Italian village; and Dorthea Lange and Ben Shawn's depression era portraits of the displaced and stricken.

The photograph has become commonplace. Portraits are less special than they use to be, but they still carry an evidential force, whether true or not, that impresses itself on our collective consciousness. There has been a full range of work from the tough and gritty to the fine and eloquent, marking the experience of human life and death. Much of it has been exploitative, and much compassionate. Sometimes the same work has been misunderstood as one or the other. We should endeavor to understand the work both in its original context and changing meanings within today's matrix of curatorial complexities and various pictorial discourses. The documentary portraiture of Robert Frank, Larry Clark, Jim Goldberg, Diane Arbus, William Gedney, Judith Joy Ross, Morrie Camhi and many others are well worth an extended look.

Much candid portraiture falls into the category of documentary. Many ethical questions are opened by taking pictures of people without their consent or awareness. What it boils down to is answering these questions: How would you feel if someone took your picture without your knowing it? Would you be concerned if it were to be published or appear in social media? What are your legal rights? Nevertheless, it remains to be said that all candid photos are not created equal. Some have a poignancy, edge, and eloquence that others completely lack. The series *Many Are Called* by Walker Evans taken surreptitiously in the New York subway comes to mind. Also, the candid up-close street photography of Harry Callahan, Philip-Lorca diCorcia series *Heads*, and *Day Return* by Stephen Gill are all exemplary.

The Celebrity Portrait

Portraits of celebrities range widely. Some photographers have taken a dignified or honorific approach. Cecil Beaton, Bruce Weber, Annie Lieboievitz, and many others come to mind. On the other end of the spectrum is the audacious idolatry supplied by the paparazzi. They are the most hated, and also the highest paid. The reason behind their very existence is that as a society we crave celebrity. Whenever we buy a magazine with candid pictures of celebrities we are participating in the paparazzi phenomenon. The most common underlying human emotion is desire. It is not surprising then that we bring voyeurism to the event of taking and viewing a photograph. It is a way to possess what is otherwise remote from our grasp. Of course, there is always an alternative — mindful photography. This is something the paparazzi do not comprehend. Instead, they possess the hunter's mentality, and their aim is money. It's a business, let's not pretend otherwise.

The Invented Portrait

Has the answer to the question "What is a portrait?" changed in the digital age? Certainly we trust photographs less than we used to and for good reason. However, if we examine the manipulation of photographs historically, it becomes clear that the veracity of the photographic image always was somewhat suspect. There have always been photographers who exploit their subjects by manipulating their appearances in subtle yet persuasive ways using camera and darkroom. The arrival of digital photography continues and expands the potential for manipulation, but it is not a new thing. There are countless examples of photographers who were not shy about altering the scene or using technical tricks. In contrast, a good photographer learns to feel with his subjects without violating them. Portraiture isn't always easy because very often when taking a picture, we know that our subjects know that we know that they are posing. In a sense then, we are actually taking a picture of their self-conscious pose. With regard to this dilemma, in his celebrated and controversial book Camera Lucida Roland Barthes wrote:

"In front of the lens, I am at the same time: the one I think I am, the one I want others to think I am, the one the photographer thinks I am, and the one he makes use of to exhibit his art. In other words, a strange action... I am neither subject nor object but a subject who feels he is becoming an object."

In the history of photography there have been many photographers who have been aware of this dynamic and have done their utmost to extend a trustworthy ease and unconditional respect towards their subjects, and in so doing they have produced remarkable portraits. Three names that come to mind immediately are Paul Strand, Edward Weston, and August Sander. Among today's contemporary photographers Nicholas Nixon and Mitch Epstein stand out as exemplary as well.

What is exceptional about digital portraiture in the Twenty-First Century is that you can invent a picture that looks like a photographic portrait without the person ever having lived. You can clone and erase to your hearts content. The invented portrait is indeed a break with the past — a scary one in this age of dark politics.

Certainly, digital photography has transformed commercial uses, especially as regards the speed of production and ease of retouching. Digital photography makes a lot of sense for traditional portrait and fashion photographers if they have access to very high-end equipment. That, however, is in the $4000 plus range at the entry level. At the end of the day, however, the intention and ethics you bring to making a portrait is more important than how it is made.

1 The Buddhist response is that the self can only be understood in terms of the five skandhas, a translation of the Sanskrit word heaps. These five psycho-physical aggregates include form, feelings, perceptions, intentions, and consciousness, all of which are in a state of flux. For this reason, the Buddha stated that there was no permanent inherently existing self.

2 Take, for example Hippolyte Bayard's *Self-Portrait As A Drowned Man* from 1841.

3 Made by *California Sunbounce*.

4 I am referring to my good friend Stephen K. Lehmer.

Approaches to Studio Lighting

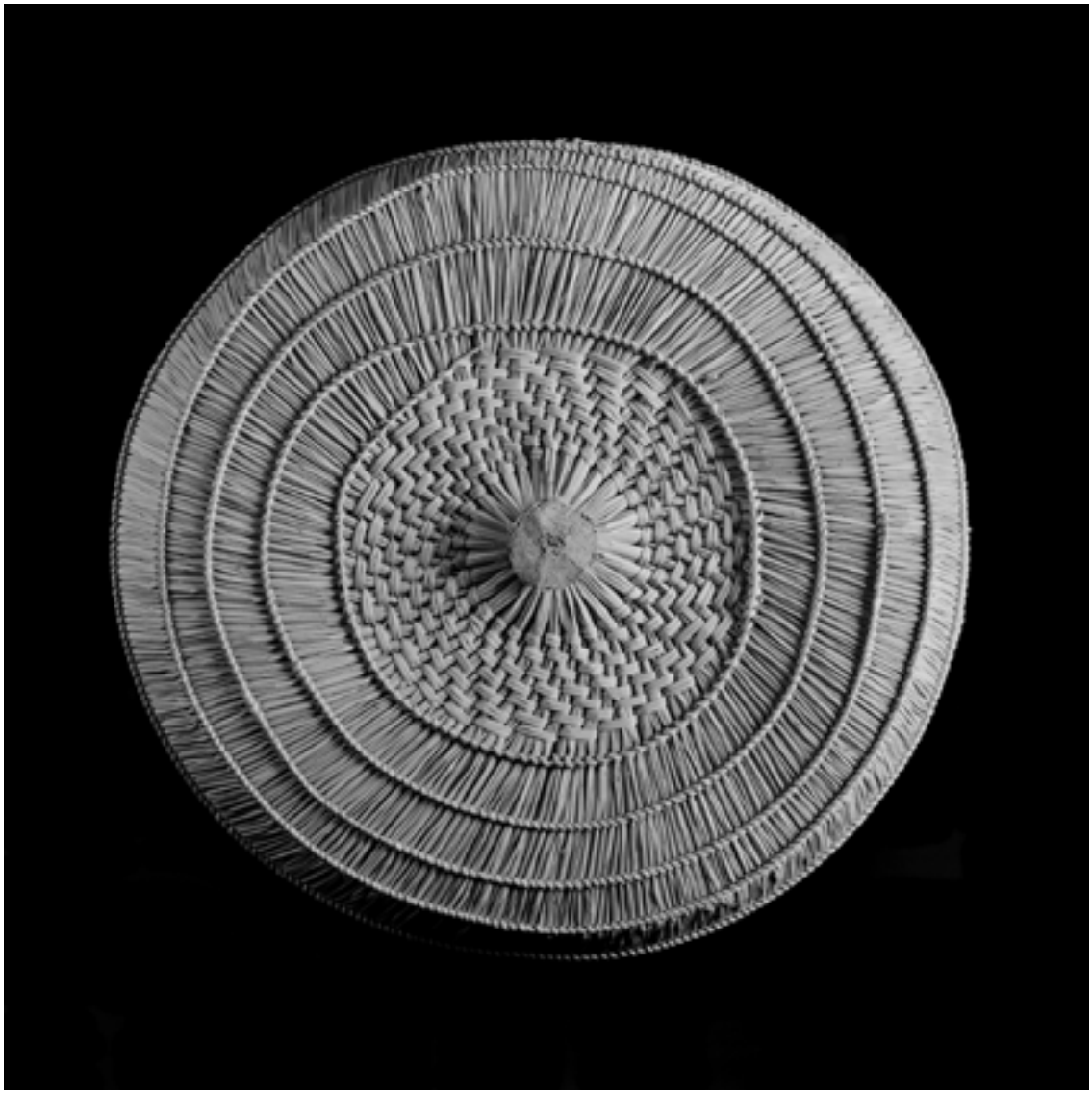
Entire books have been written about studio lighting. It is a vast subject. In the previous section portrait lighting has already been addressed. What follows is a brief synopsis of the problem solving involved in photographing objects in the studio. This begins with observing the materiality of an objects surface and then applying the appropriate strategy. The three principal surfaces are textured, metal, and transparent. Each type of surface demands a different lighting set up. Studio lighting gets problematic when the photographer is confronted with an object that is a combination of these surfaces, like a shiny textured ceramic cup, for example. In such cases one needs to try out compromises, or prioritize which features of the object are most important.

Reproduction of Artwork

In addition to these three approaches, there is a fourth strategy for the reproduction of artwork. This involves trying to get the photograph to look in every way possible exactly the same as the original. The size of the original will be a determining factor in how to proceed. A small artwork, say 11 x 14 inches or smaller can usually be photographed by placing the camera facing downwards on a vertical copy stand with the artwork lying below. Then, simply aim two lights, one on each side of the stand pointing towards the artwork at a 45-degree angle with the light spreading evenly. Use an incident hand held light meter to measure each corner and the center of the artwork. These should match within 1/10th of an f. stop. Set the color temperature within your camera's menu to match the Kelvin temperature of the lights. To photograph a larger original, simply hang it on the wall without glass and then place the camera directly in front of it on a tripod. Use a tape measure to measure the distance from the floor to the center of the artwork. Then raise the lens of the camera to exactly that height. Place two lights, one on each side of the tripod at a 45-degree angle.[1] If the artwork is somewhat glossy, it may be necessary to move the lights a bit closer to the artwork at a narrower angle. In any event, use the light meter as before to make sure that the intensity of the light falling on each corner and the center of the artwork is exactly consistent. It may take some time moving the lights around until the exact right balance is found, but once it has you can continue to photograph multiple reproductions without needing to do anything but replace the original in the same position. It will be necessary to work digitally rather than with film because the films that were designed to render artwork accurately are no longer in production.[2] The reproduction is as close to objective as a photograph can ever be. It is not exciting work, but a potentially lucrative skill for the young professional to possess.

Lighting Textured Objects

Photographing textured objects is easier than glass or metal. Like all work in the studio you simply need to simulate a situation in the real world where texture is fully revealed. Consider, for example, the golden hour, early in the morning or late in the afternoon where the light is very yellow and at a low angle on the horizon. At that time of day, the light scrapes over the surface of the earth, revealing every grain of sand and leaves of grass. In the studio you will require only one light at a low angle on one side of the subject, and a reflector on the opposite side to fill in the shadows a little if you wish. It may be necessary to place a snoot or barn-doors over the light so that it is directed precisely where you want it and not spreading out too widely. The lower the light is in relation to the surface of the subject, the more texture will be revealed and the longer the shadows will be. A flat object will be easier to photograph than a round one.



Lighting Metal Objects

Metal objects are rarely photographed well. Just look in a magazine and you will see that too many photographers rely on digital retouching to remove reflections that never should have been there in the first place. To do a good job you will require a light tent. These are available from professional camera stores in various sizes, shapes, and price ranges. Basically, a light tent is simply a box or cone constructed out of white semi-transparent fabric that maximizes the diffusion of light. You place the metal object inside the tent and set up three lights, one light on the top, and one each on the left and right side of the box, with the front open only to the lens. The metal object will reflect everything around it, so if that is kept consistently white the viewer will only see the object's shape rather than everything reflected from the surface.[3] If necessary, you can still use a minor amount of retouching to remove the inevitable reflection of the lens. A light tent is ideal for picturing metal jewelry, silverware, and the like.

Lighting Transparent Objects

Photographing glass or other transparent objects is a bit more complicated. The correct approach varies depending on whether you want a light or a black background. For a light background, you need to illuminate the background and make sure that none of the light is falling directly on the glass. Then you compose the image so that you are looking through the glass, which will reveal the light background behind it, except for a black line around the contours of the glass object. For a black background, you need to set up two scrims to the left and right of the glass object. A scrim is a large diffused material such as cotton or white plastic that is held vertically by a special light stand. Position the lights so that they broadly illuminate the scrims only. Compose the image so that the glass object appears dark, like the background, with only a light outline defining its contours. Be careful that none of the light hits the glass directly, as this will create a very harsh spectral highlight and glare. As with photographing metal, most photographers do not understand either of these strategies and instead rely on digital retouching to repair mistakes that could have been easily avoided.

Distinguishing Form Through Lighting

In addition to learning how to apply different lighting approaches for various kinds of surfaces it is also good for the aspiring studio photographer to understand the placement of lights for specific shapes: the sphere, cube, and cylinder. These three need to be mastered. Just as someone who is learning the basics of drawing must learn how to describe the volume of shapes using modulations of light and shade, so too must the studio photographer.

Let's start with the basics for lighting a *sphere*. If we place the light directly at the sphere with the light aligned with the lens axis, not unlike an on-camera flash, then there will be no visible volume. We need to move the light off to the side, and then five things will appear: a *highlight*, an *incident highlight*, a *core*, a *shadow*, and a *cast shadow*. The highlight is a spot of light almost white. The incident highlight is the part of the sphere that surrounds the highlight. This blends into the core, which is a transition arc between the incident highlight and the shadow. If the sphere is resting on a table there will be a cast shadow, also known as a drop shadow. Regardless of where you move the light away from the camera/lens axis these five lighting features will be present. A direct light will cast a brighter highlight area, smaller core, and deeper shadow. In other words, the image will be more high contrast. A more diffused light will soften both the highlight and the shadow and create a wider transition in the core. It is also possible to use a direct light together with a reflector to have the look of a direct light yet with a softer shadow. Generally, you only should use one light with or without a reflector to photograph a sphere, otherwise you will most certainly create a double shadow with two competing cores that destroy any sense of naturalness or volume. The one exception might be to add a second light for the background so as to create tonal separation from the sphere.

A cube has six surfaces, but we never see more than three of them at a time. In order to give a sense of depth to the cube it is crucial that all three surfaces that are visible are rendered with a different value. There should be one side that is the highlight, one side the shadow, and one side in-between. In other words, one side light, one side dark, and one side gray. It doesn't matter which side is lightest, medium, or dark because depth will still be communicated, however, the arrangement of these three values will give a sense of the direction from where the light is coming from. As with the sphere only one light is necessary. Move it off to the side, and raise or lower it until all three visible sides have a distinctly different value. This will work whether your light is direct or diffused. You have the option to use a reflector to fill and soften the shadow if you like. Also, optionally a second light can be used to establish separation from the background. Generally, it is good for the corner of the cube to not be pointing straight at the camera but rather a bit off-center so that each of the three visible sides of the sphere are distinctly different in shape.

A cylinder should also be lit using the same simple one light set up. Make sure you can see a bit of the top of the cylinder. This should be lit so that only a single value of light appears. The front of the cylinder will have three value gradations that transition into each other, one side light, a vertical core shadow in the middle, and a deeper shadow on the opposite side as the light side. There will also be a cast shadow on the tabletop. As with the sphere and cube it is best to have the light off to one side so as to give a sense of directionality and volume, and also to avoid having the highlight stripe down the middle of the cylinder with two core shadows emerging on both sides. If you place the light off to one side there will be a smooth transition from light, to core, to deep shadow.

1 If the artwork being photographed is very large it may be necessary to use additional lights to get adequate coverage.
2 The most accurate film for color reproduction was Kodak Ektachrome EPN.
3 Alternately, take the object to a forest or beach, or to an environment that the reflections will become a deliberate adornment.

Color

When photography was first invented, color was not an option. Although there were attempts to formulate color photographic processes from very early on, only black and white was technically feasible. The color processes that were invented were highly fugitive in their archival quality and faded quickly. It was not till the arrival of *Kodachrome* on the marketplace in 1935 that there was a reliable film available to the public. The dye-transfer process had been invented earlier and used in cinema, but although it was arguably the most beautiful and archival color print process in photographic history, it was always too complicated for mass appeal. Color photography did not give birth fully grown, but was a gradual process.

It was not until the late 1990's that chromogenic color negative darkroom photography, typically called a *C Print,* reached a level of archival dependability that it became the dominant form and process of choice for many photographers. The *Cibachrome* process, later re-named *Ilfochrome,* was a competing process using color reversal film that was also popular and in some ways superior, but more difficult. Both processes utilized toxic chemicals that we can be glad to be done with. Still, there is a special and luminous beauty to the prints produced in that short window of time from the 1990's up until digital photography displaced them in the new millennium. As we have gained in speed, convenience, and manipulation possibilities, we have lost something as well. Now *Kodachrome*, *dye-Transfer*, and *Ilfochrome* are gone, and chromogenic printing is quickly vanishing. Indeed, Kodak and other companies have sadly eliminated most of their color films.[1] Although a handful of photographers still print color in the traditional darkroom, most production has shifted to digital color inkjet printing.

Commercial photographers utilized color as soon as it was technically viable. However, it took a lot longer for fine art photographers to embrace color. There were of course some exceptions, such as Ernst Haas, Elliot Porter, Helen Levitt, and Saul Leiter, but it was not till the early 1970's that we began to see important exhibitions hanging color work in major museums. Fine art photographers such as William Eggleston and Stephen Shore were pioneers in this new interest, opening the path for other photographers.[2] One might ask why did it take so long? Why continue doing black and white when color had finally arrived? There are a number of reasons that should be considered. Color photography had been quickly embraced by the advertising industry, and thus became associated with the cheapness and the vulgarity of popular culture. Consider this quote by Walker Evans:

"Color tends to corrupt photography and absolute color corrupts absolutely... There are four simple words for the matter, which must be whispered: color photography is vulgar. When the point of a picture subject is precisely the vulgarity... then only color film can be used validly."[3]

There has been a long bias, if not disdain, against color in both occidental and oriental culture, although for different reasons. In the west, well into the twentieth century the color of choice in clothing was no color at all. This is most probably due to the opinion that form relates to logos, or male qualities, and color is related to eros, or female qualities.[4] Since we live in a male-dominated culture it should not come as a surprise that form is favored over emotion. Of course, this is an incredible reduction, but it would be hard to disprove that there has been a high degree of color phobia in occidental culture.[5] Color was regarded merely as the skin of a deeper substance.[6] The movement to bring equal rights to women, as well as the peoples of all races, will no doubt help eliminate the fear of color, which is at root an inability to mindfully identify with one's emotions in a more enlightened capacity. Another way of looking at the situation is that in today's photo-based art world which is so inseparable from popular culture, vulgarity is no longer seen as a negative. Consequently, color photography has become hegemonic in the marketplace.

If you look at oriental art, you will quickly notice how monochrome much of it is. This is less due to a fear or contempt for color, than it is philosophical. The lack of color in Chinese painting, for example, was not due to a technical inability to produce color. Ancient Chinese painting was very colorful indeed. Later generations chose to drastically reduce the use of color in art, using a subtle and rusty palette, or to work completely monochrome. The likely reason for this was that in both Chinese philosophy and in the Japanese *wabi-sabi* aesthetic, incompleteness was seen as a virtue.[7] It is believed that the viewer of the artwork could better complete a picture in their mind if it wasn't too realistic in materiality. Outward appearance did not equal inner reality. The move towards

monochrome in oriental art was also somewhat of a reaction against gaudy high culture.

Fine art photographers have learned to use color in subtle, emotionally expressive ways, and it is unfair to dismiss the use of color as merely decorative adornment. The world is in color. For some artists, color is the better choice for documentary realism. For other artists, color is a far more expedient medium to transmit emotion. So, the choice to work in color or not is not merely technical, but has more to do with what you are trying to show and say with your images. Black and white is less emotional, more cerebral, and attentive to form. Black and white is more distilled, abstract, and solicits a feeling of tactile physicality, mass, and weight, whereas color is emotion and sensual in all its passionate richness. Experience tells us this, nothing more. It is not something that can be proven.

Nowadays the choice to work in color or black and white no longer hinges on technical considerations. If you want to be austere and abstract, you should go with black and white. The choice might also just be a matter at how you see, what you are good at. Some people are simply better at working in black and white than color, or vice-versa. This is something you can only find out by working for a long time in both mediums. Neither black and white photography nor color photography is inherently superior to the other.

However, you should distinguish their characteristics. Unfortunately, fine art photographers working in black and white in today's world suffer from a cultural bias that is difficult to overcome — namely, the idea that black and white signifies nostalgia. This is a problem that has been fed steroids by the Hollywood film industry, especially since the film *Pleasantville* was released in 1998. If you take an inventory of the uses of color and black and white in the many dozens of

films that use both together in the same film, you will come to the inevitable conclusion that Hollywood has completely messed up any consistent reading. We are left with their combination being a structural device for cutting up time, in which meaning is up for grabs and only makes sense within the context of one particular movie alone. As an artist and a photographer you need to look beyond the bias of nostalgia, not unlike the Chinese painters who deliberately worked in monochrome even though they had a full palette of color available to them. In other words, don't work in color by default, but for specific reasons.

We perceive the world as full of color, but scientifically speaking color does not exist in the physical world. Consider this experiment. If you look at a polarizing filter it will appear gray. If you lay one polarizing filter on top of another and turn them, they will appear gray, becoming darker as they turn to black. If you place certain types of achromatic material between them, such as a clear CD jewel box, clear cellophane, or a clear sliver of mica crystal, together they will appear rainbow-like in color. How can three things with no color produce a colorful appearance? The color is clearly not in the physical object, but rather the appearance which occurs in the mind. This is also true when you see color in a raindrop, or in a puddle of oil mixed with water on black asphalt. In her brilliant book *Color: A Natural History of the Palette*, Victoria Finlay makes a similar observation.

"The first challenge in writing about colors is that they don't really exist. Or rather they do exist, but only because our minds create them as an interpretation of vibrations that are happening around us. Everything in the universe — whether it is classified as 'solid' or 'liquid' or 'gas' or even 'vacuum' is shimmering and vibrating and instantly changing. But our brains don't find that a very useful way of comprehending the world. So we translate what we experience into concepts like 'objects' and 'smells' and 'sounds' and, of course 'colors' which are altogether easier for us to understand."[8]

The appearance of color depends on the existing illumination. Light is electromagnetic energy that radiates in specific wavelengths of energy quanta. The human eye can perceive only a very narrow amount of the full spectrum of this energy. The light that is visible is basically the rainbow. Green is at the center of the rainbow. It is for this reason that the German poet, philosopher, and scientist Johann Wolfgang Goethe regarded green as the most harmonious color. There are countless theories of color, and artists who work in color should familiarize themselves with at least a few of them. Many of the ideas about color stem from their materiality and are related to alchemy. Yellow, for example, is similar to gold, which stands for increasing wealth, merit, and prosperity.[9] In the age of heraldry, colors were associated with the precious gems and semi-precious stones that were ground to manufacture pigments. This also influenced their value and meaning. Artists have to either fully embrace an existing system of color symbolism, to modify or combine two or more existing systems, or to codify an entirely new system of their own. The latter is a high stakes affair in that there is a strong chance nobody will be able to decode your system unless you spell it out for them. Still, maverick avant-garde artists like John Baldessari have taken that chance with considerable success. Furthermore, aside from the science of color, different cultures and religions have symbolized color in sometimes similar, other times different ways, thereby confounding a pattern of universal truth.[10] Furthermore, it is interesting to note how different colors have been characterized in language. To say someone is "true blue," means they are faithful. Yet "once in a blue moon," is equivalent to seldom. If you get depressed, you might get "the blues." To be "green with envy" is not so far off from the German *Giftgrün*, meaning poisonous green. Both are far removed from being a member of the political Green Party. If someone calls you "yellow," you are basically being called a coward. No doubt people of Asian origin would find that

offensive. In the age of McCarthyism, Richard Nixon called out his female opponent for congress as being a "pinko," meaning a hidden effeminate communist, not so far off from a "red" or card-carrying proud member of the communist party. The list goes on and on. At the end of the day be honest with yourself and do some research and try to simply size up what makes sense with regard to color. Then, when you want to make a picture which expresses desire, for example, you will have a clear sense if red is more appropriate than ochre. Through linking colors to inner emotions artists can be freed from the obligation to pledge their allegiance to realism and instead let the imagination take flight.

It is also worthwhile for the aspiring art photographer to study and observe how colors are perceived.[11] One of the things to take note of are color casts. One color can shift and blend in hue towards another color due to walls, sky, and nearby objects. This can happen intentionally or unintentionally. Also, some colors appear to be warmer, such as yellows and reds, while blues and greens appear cool. Pale cool colors seem lighter and less solid, whereas dark warm colors seem heavy and dense.

The human eye adapts to light conditions, although not everyone will see exactly the same colors. Film does not adapt. Each color film has a slightly different palette of colors and is calibrated to work either in daylight or tungsten conditions.[12] The digital equivalent is called *white balance*. Auto white balance works very well, but for studio conditions it is generally better to set the white balance manually in the camera's menu. Not every digital sensor will interpret color in the same way. It should be pointed out that theories of color for painting are not entirely translatable into photography for the simple reason that light mixes in different ways from pigments. There are two systems for how color is produced in

photography: additive and subtractive. Early photography, television, and computer monitors are based on the principals of additive color. In this system the basic primary colors are red, green, and blue (RGB). Each of the three colors radiate and mix in varying proportions to create all colors of the spectrum. The sum of equal parts is white. Green + red = yellow. Red + blue = magenta. Green + blue = cyan. The alternative system, used by the printing press, is subtractive. The basic primary colors in this system are cyan, magenta, yellow, plus black (CMYK). These color dyes absorb red, green, and blue, thus subtracting them from white light. The sum of equal parts is black. Cyan blocks red, magenta blocks green, and yellow blocks blue. Film is covered with three layers of emulsion. The bottom is sensitive to red. The middle is sensitive to green. The top layer is sensitive to blue. After development, red forms a cyan image, green forms a magenta image, and blue forms a yellow image. It is not necessary to know all of these technical details when you are out taking pictures, however, it does make you a better printer.

One of the biggest challenges to working in color is resisting the temptation to always oversaturate. In the days of color film photography, saturation could only be modestly controlled by working in a special light, like the golden hour, combined with using films specifically designed to enhance saturation, and choice of paper. Now with Camera Raw, Lightroom, and Adobe Photoshop you can very easily make a pale scene look vibrant. What's the problem with that, you might ask? Well, no problem really, except that the very charm of the scene might have been its paleness, a subtle ambient atmospheric quality, a hint of emotion. Many if not most photographs seek to catch the eye of the viewer usually with dazzling colors and angles, and potent or loaded subject matter. Ambient photography seeks merely to generate an atmosphere with subtle color.[13] The best subtle photography leaves viewers who take their time something of substance to take home and ponder.[14] There are times, however, when saturation and bright colors are imperative to the integrity of the photograph. Some pictures just aren't interesting otherwise. It bears repeating that, if you are going to work in color to do so for a reason. Ask yourself if you are you using color as a culturally coded sign, as a symbol or trigger for emotion, or out of sheer sensual delight. Consider the Japanese photographer Shomei Tomatsu, whose early work was exclusively black and white and then shifted to color later in his career. In the essay *Toward A Chaotic Sea*, he writes:

"I am often asked why I insist on color rather than black and white photographs. The scenery and way of life in Okinawa are beautiful. The blue sky is endless. The sea is blue enough to dye your hand. While reflecting the sun, the sea changes its color from majestic blue, emerald, peacock green, to cobalt. As the sun burns, the wind shines. Colors in the subtropical zone are dazzling."

Tomatsu had early in his life been influenced by the nitty-gritty street photography of William Klein and Robert Frank. He associated black and white with the American occupation of Japan. He turned to color to liberate himself from the past. Why will you use color?

1 There is a welcome rumor that Kodak will be bringing Ektachrome back in the near future.

2 In *American Photography: A Critical History*, Jonathan Green called the color renaissance of the seventies "A New American Luminism," which was a merging of the vernacular and sublime, not unlike the painting of Edward Hopper.

3 It is worth noting that in the last few years of his life Walker Evans changed his mind about color photography and worked almost exclusiviely with Polaroid SX-70 color film.

4 Consider this quote from page 35 of *Color and Meaning* by John Gage: "In the nineteenth century the French theorist Charles Blanc stated categorically that 'drawing is the masculine sex of art and colour is the feminine sex and for this reason color could only be of secondary importance."

5 The writings of John Gage in Color and Meaning and other books by the same author, as well as Chromophobia by David Batchelor go into these arguments in considerable detail.

6 "In Greek thought the idea of colour (*chroma*) was itself related, on the one hand to skin (chios), that is, to the surface rather than to the substance, and on the other to movement and change. A sixth century Christian commentator on Aristotle, Johannes Philoponus, denied that colour itself was an indication of substance..." (Ibid, p. 69).

7 For a complete explication of this idea see: Leonard Koren, *Wabi-Sabi for Artists, Designers, Poets & Philosophers*, Imperfect Publishing, Point Reyes, California, 1994.

8 Victoria Finlay *Color: A Natural History of the Palette*, by Victoria Finlay, Random House, New York, 2002, p. 4.

9 In Tibetan Buddhism, gold and yellow relates to wealth, silver and white to pacification, copper and red to power, and iron and green to subjugation. Each metal and color is related to a different direction in a mandala, a specific wisdom awareness, and a specific element. The system is quite extensive in Vajrayana Buddhism.

10 For example, in Tibetan Buddhism blue represents the unchanging nature of pure awareness, whereas in Christianity it represents advent or Mary.

11 The studies by Johannes Itten and Joseph Albers are important examples, along with precursors to modernism, such as Turner (influenced by Goethe), Delacroix, Chevreul, and of course the Impressionists, followed by Seurat.

12 In his book *Alongshore*, historian John Stilgoe writes: "Only a handful of photographers know the warning issued by Eastman Kodak in 1985, in Reference Sheet E-73, a bulletin that reads remarkably like the Coast Guard Notice to Mariners. Sheet E-73 warns of the limitations of color film chemistry. 'Other colors disappear, such as shades of chartreuse, lime, pink, and orange - may not reproduce so well" the company cautions. "It would be possible to design a film that would reproduce these colors better, but then some of the more important colors would suffer." Eastman Kodak designs color film first for its chief mission, the accurate recording of skin colors, then for its secondary mission, the accurate recording of 'common memory colors such as those of the sky, grass, sand, etc. After that, color film may or may not do very well in recording say, the chartreuse of so many salt-marsh grasses or the chartreuse bikini of the woman watching the horizon."

13 Often there is no center of interest at all. Like ambient music, the viewer can place their attention deliberately, rather than in a compelled way. Ambience is not merely low volume. Elevator music is also low volume. Likewise, ambient photography is more than wall paper. It is not merely decorative.

14 Some of the work of Christina Fernandez, Simone Nieweg, Jan Groover, Uta Barth and many others are good examples.

Photography of the Landscape

What is a landscape? Be prepared to get a variety of answers if you ask an artist, a hiker, a real estate developer, an environmentalist, an industrialist, a dirt biker, an urban planner, a landscape historian or architect, an art historian, a poet, and a military strategist. You begin with a very personal perception of an expanse of earth, and seek to frame your experience of a place aesthetically, recreationally, and spiritually. A landscape photograph is a representation of a piece of earth. As a genre, landscape photography is embraced by both fine art and documentary traditions. The historical development of the genre of landscape photography can be broken down into a few distinct phases: early war photography; picturesque landscape photography; exotic realism; old west landscape photography; classic straight landscape; metaphorical landscape; the built landscape; documentation of earthworks; and the colonialized landscape. What do they all have in common? Like any photograph, a landscape is a collection of shapes marked with light.

The word *scape* is derived from shape.[1] A landscape is both a place on earth and a picture, a collection of shapes. Our memory of the landscape, left un-pictured, is a place of reverie. Insofar as we choose to depict places that are intensely meaningful to us landscape photography can be autobiographical.[2] Most of the time, however, landscapes are not about the photographer. Often they are symbols of the sublime,[3] or the American frontier blown to dust, reduced to the pathetic irony of theme park simulation. Sometimes they are simply records of geography, indexes of where the photographer has been. The best work is not easily categorized and continues to enchant, fascinate, and disturb.

The landscape is a repository of history. Both geology and humankind have marked and shaped the land. Natural forces simply work at a slower pace than humankind. If something is possible, it is natural. Yet, even though people are a part of nature in the sense that we are as natural as anything else, we still make a relative conceptual distinction between humanity and nature. The reason for doing this is that otherwise we might be misled into believing that nature and landscape are purely a social construction, rendering the linguistic distinction between nature and culture useless. This attitude is disastrous for the non-humans living in what is left of the undomesticated as well as the built environment. The idea of human activity as natural allows for and to a certain extent excuses any excessive development of the land without respecting the need to preserve biodiversity through retaining wilderness regions. In his book *The Practice of the Wild*, Gary Snyder pointed out the difference between the natural and wild. Anything alive is natural, even a biological culture genetically manipulated at Monsanto Corporation. Not everything, however, is wild — not even our national parks. The wild is what has been left alone in its rich indigenous local diversity and must be distinguished from that which is domesticated. The wild is always a part of nature, but nature is not always wild. Do you want your photographs to be wild, domesticated, or a bit of both? What will you point your camera at? Go to the edge of nature and culture and trespass that threshold.

When you encounter a special place and get the impulse to take a photograph, pause before you set up the tripod and listen to the land. The sacredness of the place will then come through. For the mindful photographer landscape photography is an opportunity to participate with place and space, to let the land think through you. This is not a new idea, but rather goes back to the Chinese mountains and rivers (*shan-shui*) tradition of poetry.[4] Centuries later, the Japanese haiku poet Basho put it this way: "Learn about a pine tree from a pine tree, and a bamboo stalk from a bamboo stalk." To philosophize about the landscape and our place in it is a somewhat unfulfilling practice. It can go on endlessly, whereas to simply be with the landscape, to breath its air and give that air back; to open up to the waves, the light— this is fully available. It's almost too easy. As cliché as it may sound, a small child needs no training in this. Yet for adults it's a kind of meditation, an acquired skill, a way of unlearning the need to prove or acquire something and to accept the world as it is. This is where genuine humility comes from. The monumental landscapes of Andreas Gursky lack this humility, whereas many of the reticent photographs of Robert Adams, Frank Gohlke, Geoffrey James, Mark Ruwedel, John Divola, James Welling, Jungjin Lee, Werner Hannappel, Simone Nieweg, and others exemplify that honorable attitude.

We experience a shared reality individually. When we make photographs it is fair to ask ourselves if we want to emphasize the inner or outer pole of being in the world. To participate with the land we must reconcile inner space and outer place. The inner pole of landscape photography is consciousness itself, whereas the outer pole comes down to the soil, the surface of the earth. Land is a portion of that surface. Consider the words "England," "Switzerland," "Zwaziland," and "Disneyland." These lands are simultaneously geographic, political, and cultural. The mindful photographer must be aware of this fact and the

possible associations a viewer might project. However, during the actual time of working in the field you should endeavor to be fully present and open to what presents itself. This requires cutting through discursive thinking and being in the ongoing moment. You don't necessarily need to drive all day to get to a vista point rest stop in time for a stunning sunset. Rather, be aware of the vernacular landscape anywhere along the way, and have your camera ready.

By the 1970's two opposing forms of landscape photography had taken root. On one extreme was the very beautiful, yet arguably cliche Sierra Club aesthetic, and its opposite, the so-called "Beer Can School"[5] of landscape photography. The former was like a *Playboy* centerfold featuring idealized images of undisturbed wilderness deeply indebted to the photography of Ansel Adams and the Romantic era of painting. The latter was like the needle and the damage done, stark depictions of the land devastated by human activity. As a landscape photographer you showed either the beauty of the forest or the devastation of the clear-cut, but rarely a middle way.[6] During the decades of post-modernism in the 1980's and 90's, landscape photography was unpopular.[7] During that period of time many art schools taught that art should be based exclusively on theory and that anything else was morally irresponsible. Artists coming of age during the transition period between modernism and postmodernism were expected to embrace the virtues of ugliness, and the word *beauty* had become a dirty word. It was therefore somewhat surprising to see landscape photography make such a comeback in the new millennium.[8]

There is a little discussed sub-genre of landscape photography that includes the documentary and romantic traditions, yet transcends both. The quality of the images could be described as quiet, spacious, and luminous. What did these photographers point their cameras at? Landscapes to be sure, but landscapes bathed in light, melancholy uncluttered landscapes and quiet moments.[9] These are images not of what the photographer saw, but what they wanted us to experience.

Where is landscape photography going? The answer to that question is essentially up to today's young photographers, and what's left of the so-called natural and wild world left for them to photograph after the needs of humanity and the greed of big business exhort their tolls.

1 However, when we coin a term like "soundscapes," as guitarist Robert Fripp has done for his electronic improvisations, we are using scape metaphorically. Here soundscape does not mean soundshape or system, but rather an expanse of sound bits that taken together provide the listener solace, and invite her to dream and affirm with mindfulness. Likewise, Brian Eno has commented that many of his ambient sonic compositions from *On Land* are meant to invoke 'imaginary landscapes." This is a reversal of Alfred Stieglitz's idea of the "equivalent," wherein beautiful black and white photographs of clouds, for example, were meant to invoke music in the mind of the viewer.

2 The series *Texas Memories* by Frank Gohlke is an excellent example.

3 The sublime is an idea of western philosophy (Edmund Burke, Kant) that encompasses art, music, and literature. However, the sublime is more of an ecstasy than a philosophy. Nature is conceived of as grand and magnificent, an enormous departure from Genesis. To abandon the rigors of classicism and its ties to the church in favor of an unbridled praise of intense feeling is then a way to take part with the striking glory of nature and by extension the unmediated glory of God. Pain, terror, and violence are in no way excluded from the sublime.

4 In the introduction to *Mountain Home* translator David Hinton sums up an ancient attitude that resonates with today's urgent concerns:

"Originating in the early 5th centuryC.E. and stretching across two millennia, China's tradition of rivers-and-mountains (shan-shui) poetry represents the earliest and most extensive literary engagement with wilderness in human history. Fundamentally different from writing that employs the 'natural world' as the stage or materials for human concerns, this poetry articulates a profound and spiritual sense of belonging to a wilderness of truly awesome dimensions. This is not wilderness in the superficial sense of 'nature' or 'landscape, ' terms the Western cultural lens has generally applied to this most fundamental aspect of Chinese poetry.

'Nature' calls up a false dichotomy between human and nature, and 'landscape' suggests a picturesque realm seen from a spectator's distance — but the Chinese wilderness is nothing less than a dynamic cosmology in which humans participate in the most fundamental way."

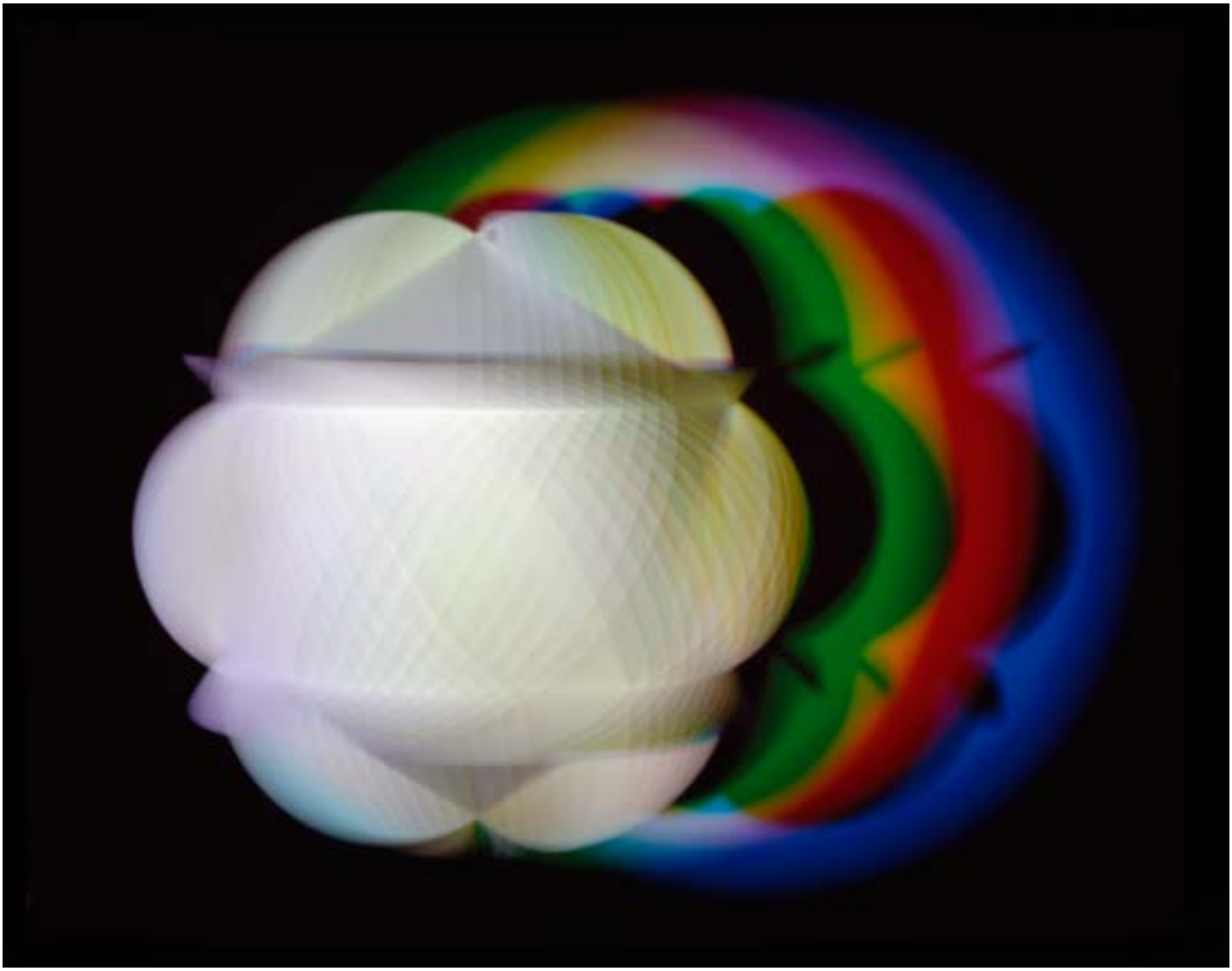
5 This euphamism was introduced to the author by Mark Ruwedel.

6 A notable exception is the work of Frank Gohlke, that often focused on the devastation caused by natural disasters, such as the eruption of Mt. St. Helens.

7 There are a few notable exceptions to this lack of appreciation, such as Richard Misrach, Robert Adams, Frank Gohlke and John Pfahl who continued doing exemplary work.

8 Photographers suddenly enjoyed the ability to work free of self-righteous opinionated aesthetic materialism. The documentary landscape photography of The New Topographics from the 1970's had skipped a heartbeat of two decades to somehow fuse with the sensibility of the sublime.

9 The landscapes in Joel Meyerowitz's *Cape Light*, and Werner Hannappel's *Cape Distance* come to mind. For me there is often a sense of melancholy in images depicting vast stretches of land, sea, and sky without clutter. I do not mean melancholy in the sense of depression, but rather a feeling which is spacious yet pensive, like the music of Erik Satie, Arvo Pärt, and the early ambient experiments of Brian Eno and Harold Budd.



Experimental Photography

When you mention *experimental photography* people usually think of antiquated processes from the nineteenth century. In actual fact, there is nothing particularly experimental about these processes and techniques which employ established recipes, accomplished with mostly toxic chemicals that achieve predictable results. Experimental photography as re-defined here involves three general approaches. Firstly, to study a variety of photographic processes which differ from standard, as supports for thoughtful transactions rather than ends in themselves. These include the photogram and other camera-less processes, and photomontage. Secondly, to investigate "chance procedures." Thirdly, to experiment with new genres of photographic art-making involving sculpture, installation, projection, and performance art. To be experimental is to investigate uncharted territory, rather than to remain complacent and satisfied with existing frameworks. In this sense, experimental photography pushes the boundaries and embraces the avant-garde, employing techniques that often fall through the cracks of photography education. Experimental photography also considers new ways of approaching old structures, such as 3-D photography and the slide show.

Photomontage

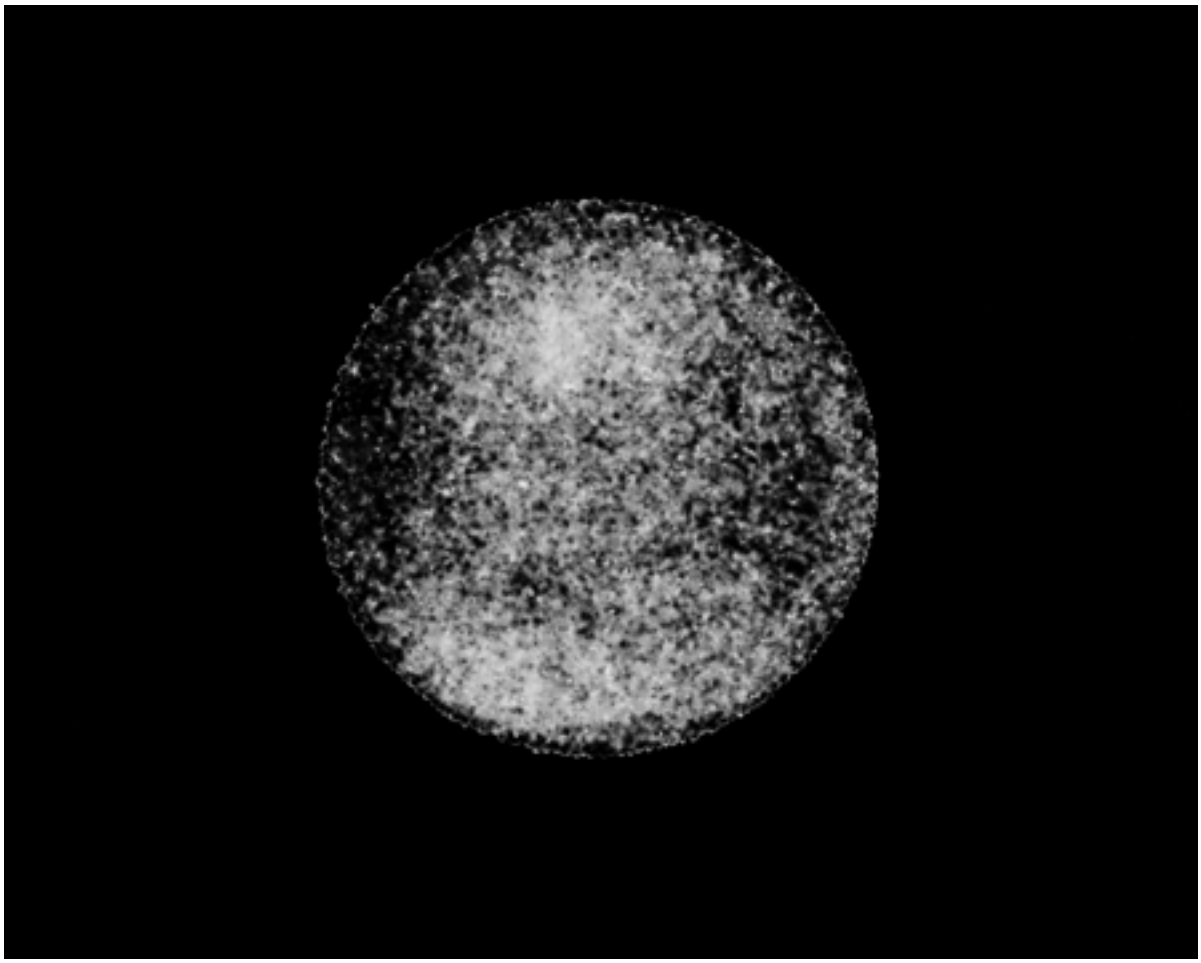
Photomontage has a long history in pop culture, advertising, early modernist art, as well as political art and postmodernism. A photomontage is not the same thing as a montage in film, which happens through editing a sequence of scenes in time. Rather, with still photography a montage is the unification of many pictures seen as one. There are two very distinct approaches with equally clear purposes. On one extreme is the seamless hidden photomontage accomplished with the help of Adobe Photoshop, and on the other extreme is a deliberately obvious cut-and-paste method. Regarding the former, the attempt to feign realism through combining multiple negatives goes back to the 1850's with the work of Henry Peach Robinson and Oscar Gustav Rejander. As with most directorial work their photographic art was intended to be allegorical. The techniques they established were later put to use in advertising photography and political propaganda. By the 1950's X-ACTO knife and airbrush technique had become so sophisticated that there was even a ministry in the Chinese government that specialized in altering politically sensitive photographs of Chairman Mao. The inheritor of the seamless approach is Photoshop. We no longer can easily distinguish what was recorded from what was digitally simulated.

What distinguishes the seamless from the manual cut-and-paste form of photomontage is that the latter does not try to hide the fact that many separate images have been combined into one. The early modernist Dadist and Constructivist photomontages of Raul Hausman, Hannah Höch, Laslo Moholy-Nagy, Kurt Schwitters, El Lissitzky, Alexander Rodchenko, and others were experimental in the extreme and often politically left. This is particularly the case with regard to the anti-Nazi photomontages of John Heartfield. A similar thread of sensibility continued with Klaus Staeck's political posters of the 1970's and still endures today with the ongoing postmodern work of Barbara Kruger. We never become duped into taking the false to be real because it is all too obvious. Instead we get a collision of various picture planes and perspectives combined and collapsed into one gestalt.[1] Photography inherited geometric perspective from the camera obscura and Renaissance painters. Not unlike early modern Cubism, low tech photomontage collapses linear perspective, together with the sensibility of control and order that accompanied the so called Age of Reason. The high tech use of montage in Photoshop reintroduces order and control on an unprecedented scale. It thus bears repeating that the word "photomontage" encompasses two extremely different practices, sensibilities, and purposes. The only thing they have in common is that they unite many separate images into one gestalt.

Camera-less Photography

The photogram is a form of photography in that it marks with light. It is simpler than a photograph because it does not require a lens or camera. You simply need to lay objects onto light sensitive paper in the traditional darkroom and then expose the paper to light, usually using an enlarger in the traditional darkroom. The result is a negative image. Light does not pass through the densest objects so they appear light, while the thinner objects appear dark. The area where no objects were placed will appear black if the exposure was bright and long enough. By layering objects, a variety of grays can be produced, and also varying degrees of sharpness. The objects that directly touch the paper will be sharp, whereas, those furthest from the paper will be out of focus. Photograms have no grain because film is not involved in the process. In this sense one could say they have total resolution, or no resolution. The Photogram involves no optical translation of appearances, and thus does not employ Renaissance or "geometric" perspective. The French word for lens is *Objectif*, and in German *Objective*. The bias of realism is built into the language of lens-based photography. Since the photogram lacks this intermediary it becomes synthetically and organically subjective. For most viewers the effect is a strange shadowed version of reality.

The earliest form of camera-less photography, aside from a suntan, was coined "Photogenic Drawing" by its inventor William Henry Fox Talbot. One of the earliest forms of the photogram was the cyanotype.[2] It was invented by Sir John Herschel, who coined the name "photography." One of the first people to experiment with the process was a friend of Herschel's, the botanist Anna Atkins. She did not receive much credit until recently because she was a woman and did not fit neatly into the male dominated histories of photography. She also made the first photographic book, although William Henry Fox Talbot usually gets the credit because he made the first book with photographs made from paper negatives. In the early years of photography the cyanotype was used as a kind of science project in school and not really perceived as art. It fell into obscurity until the beginnings of modernism.



In 1920, the Swiss Dadist Christian Schaad used camera-less darkroom processes as a kind of glue-less collage. He modestly called his "invention" *Schaadography*. This is kind of funny because in Swiss-German the word *schade* means "pathetic." The *Dadists* believed the world had gone mad during World War I and so they turned their backs on rationality and tradition and embarked on a new anti-aesthetic based on nonsense and artwork made from trash. Meanwhile in Paris, the American Surrealist Man Ray independently re-discovered the same process by accident while working in his darkroom. He unintentionally hit the light switch while some objects were sitting on a piece of photographic paper, and modestly named the newly developed object the Rayograph. Influenced by the writings of Sigmund Freud, the surrealists were interested in exploring the erotic unconscious. Meanwhile in Germany, the Hungarian constructivist Lazlo Moholy-Nagy independently re-discovered the same process. He called it the Fotogramme, an allusion to the Telegram, a medium both automatic and modern.[3] The constructivist *fotogramme* conceived light as energy in motion. The brushstroke and its references and sentiment were absent in the new utopian vision of these artists. Here one painted with light almost automatically and usually abstractly. The subject matter of the work became primarily a display of relativity and spiritual non-materialism — a celebration of light rather than

a reference to objects in the world. Over time the spelling of *Das Fotogramme* became *Das Fotogramm*, and in English the photogram. In 1937 Henry Holmes Smith was asked by Laszlo Moholy-Nagy to teach the first course in photography at the New Bauhaus in Chicago. His approach was expressionist, and he made photograms using chemicals which came to be know as a chemigram. This process is still vividly alive today with the work of Doug Aitken who made a photographic series called *Chemical Spill* using MSG, Prozac, and other substances.

The photogram found its place into nearly every movement of modernism, and continues to be relevant today. In the 1960's Robert Heinecken made photograms with a pop sensibility that were both politically and erotically charged. From the 1960's through the 80's the German photographer-artist Floris Neusüss experimented widely with the photogram by using moonlight (*Nachtbild*) and lightning and rain (*Gewitterbild*) as light sources. He also did life size photogram nudes. The photogram was not always popular. Indeed, during the years when postmodernism reigned hegemonic in art schools, it was largely ignored except as a trite and trivial assignment to learn how to print in the traditional darkroom. However, there were a few artists who helped revive the practice. Beginning in the 1970's Jerry Burchfield pioneered the color photogram. He also did performance art involving the real-time making of a photogram as an integral component of performance art and installation. In the latter part of his life he developed a process known as the lumen print, which involved making a photogram using black and white photographic paper over an extended period of time, causing it to appear in color. Beginning in the 1990's and continuing today the artist Adam Fuss experimented with abstraction and symbolism using the photogram process. In contemporary photographic art probably the most influential person encouraging others to experiment with the photogram has been James Welling who continues to extend the boundaries.

All camera-less process such as the photogram, cyanotype, luminogram,[4] chemigram, the *cliche-verre* technique[5], and the lumen print include some degree of chance mixed with predictability. You never know what will appear until you try. In this sense camera-less photography will continue to be a form of experimentation.

Indeterminacy and Photography

What is the history and what are the ways *chance* willingly finds its way into photographic works? There is a long history of divination in the history of mankind which involves such means as tossing coins, dice, sticks, or picking cards from a deck, to name just a few of the common methods. Great systems of indeterminacy related oracles such as the Chinese *I Ching*, the Tarot, and the Tibetan *Mo* are just a few examples. Serendipity entered into the discourse of western art-making early on in the Twentieth century, particularly with the Surrealists and Dadists, but it really took flight under the influence of the composer John Cage. He felt that the function of art was not for self-expression but rather to imitate nature in her manner of operation which he believed to be profoundly indeterminate. His philosophy implies the invisible interconnectedness of all things. Cage would set up highly structured situations where something might happen and then let it unfold without interference from the personal ego controlled by likes, dislikes, and indifference. This meant he had to abandon art as spectacle and as a means to express emotional intensity in trying to control the consciousness of his listeners. The results were always unpredictable and often less than harmonic.

There are two other general ways of approaching indeterminacy in art. The following quote by the poet Jane Hirschfield nicely summarizes one:

"... an artist's originality lies in seeing which of chance's gift's might be of use."

Here one is not obliged to accept every result, but to cultivate an attitude of working in a sprit of

openness. The individual does step in to sort things out after the initial burst. It's a kind of middle ground that allows one to begin the process of art making by entering into situations that the ego-mind might have initially militated against. Similarly, Minor White advocated putting oneself "in the path of accidents," to put oneself "at the service of an outside power. So that when I photograph an outside (or inside) power may leave its thumbprint." He attempted to cultivate "happy accidents". An example he gave in his 1957 essay *Found Photographs* reads like a good assignment:

"Toss flowers in a pool and follow them as they trace the slow undercurrents of the water and twisting breath of the wind. Then, as they move at seemingly random, photograph precisely."

In this way, not unlike a good jazz improvisational musician, White advocates variations on a theme not entirely preplanned and controlled, but not because one hasn't mastered the craft.

A third yet similar formula is presented by Brian Eno, and is more or less disinterested in craft:

"My contention is that a primary focus of experimental music has been toward its own organization, and toward its own capacity to produce and control variety, and to assimilate 'natural variety'— the 'interference value' of the environment. Experimental music, unlike classical (or avant-garde) music, does not typically offer instructions toward highly specific results, and hence does not normally specify wholly repeatable configurations of sound. It is this lack of interest in the precise nature of the piece that has led to the (I think) misleading description of this kind of music as *indeterminate*. I hope to show that an experimental composition aims to set in motion a system or organism that will generate unique (that is, not necessarily repeatable) outputs, but that, at the same time, seeks to limit the range of these outputs. This is a tendency toward a 'class of goals' rather than a particular goal, and it is distinct from the 'goalless behavior' (indeterminacy) idea that gained currency in the 1960's."[6]

The key to this approach is to establish a *system* which will self-organize or self-generate the finished artwork. The results can then be either embraced or abandoned after the experiment, unlike with Cage who was more than willing to embrace noise as a finished result, in his conviction that all sound is equally sound.

There has been abundant diversity with regard to how indeterminacy has been applied to photography. Douglas Huebler's playfully humorous conceptual duration, location, and variation pieces, take Cageian ideas of indeterminacy to a new level insofar as the works are so cheeky that one calls into question the veracity of both word and image. Lew Thomas, John Baldessari, Robert Heineicken, Paul Berger, Douglas McCullogh, Jerry Burchfield, and many others have used chance to some degree in the making of their works with great success. Sometimes you literally need to shoot in the dark to let the camera help you see what's out there. The work of photographers such as Richard Misrach (*Night Photographs*, 1975—97) and Naoya Hatakeyama (*Underground*, 2000) who have literally gone to very dark places to shoot into the void are cases in point. Lastly, there is the photography of the visually impaired, wherein the taking of a photograph is intuited more than seen, empowering the blind photographer with a new eye.

New Genres

"New Genres" is a name that has been given to art practices that do not fit neatly into the traditional category of painting, sculpture, printmaking, ceramics, photography, and other media. New genres includes video art, installation, and performance art. Over the years, other terms such as crossover, interdisciplinary, and post-studio have also been applied to define hybrid art disciplines. Whatever you call it, when photographs are projected and used as part of an installation or otherwise integrated into a sculptural work or performance they fall into this zone of practice. Like all art, if it's good a transaction takes place, but it is not always possible to say where the artwork begins and ends because the frame of the work extends into the world. New Genres work does not typically seek to neatly confine an image into a rectangle. Rather the context of the work tends to magnetize meanings from the surroundings of the work, including both the viewer and environment. There is certainly plenty of room for experimentation within such an expansive framework. The photograph might be the center of attention or it could be a small support on the fringe of a larger work. Many questions are then raised about photography as a fine art, many of which have already been addressed in this Operating Manual. In any event, it comes down to understanding that any art object or art event or even documentation of an art event is primarily there as a point of interaction with viewers to take them to either an intellectual or heart-felt elsewhere or else bring them fully into the moment. Does a transaction occur? That is our job as artists.

One form of photography that is often ignored by critics is the slide show. The origins of the slide show go back to the theater of shadow play, which became quite sophisticated in many places, especially Southeast Asia. Early forms of the slide projector were called the Magic Lantern which required three things: a light source, a transparent image, and a lens.[7] This eventually evolved into a slide projector and then a digital projector. Perhaps the use of slide shows by families, schools, and industry made it too mundane to take seriously. Nevertheless, many artists have worked with this medium and for good reason. It could be argued that the luminous ephemeral quality of an analog projected image made with transparency film on a silver screen is the most beautiful form photography has ever taken. Digital projection is brighter, but not nearly as sharp. Sadly there is nothing to sell in the marketplace. Making a slide show can be likened to stringing a necklace. You search for the right jewels, search again, string them, unstring them, string and restring them again, numerous times. You sequence, adding and taking away the parts until you find what works together, just the right length. The slide show unfolds through time,

although not in the same way as a film, but rather through flow, arrested flow, decay, and growth. In other words, like life, it keeps changing.

Three-dimensional photography based on binocular vision has suffered alongside the slide show as a serious endeavor for artists. Although 3-D is nearly as old as photography and was used by pioneers with remarkable success, it has been largely ignored by contemporary artists, with a the notable exception of Jim Pomeroy. This is partly due to the need for clumsy viewing devices, such as stereoscopes, a variety of special glasses, and projection systems. Subject matter was also a problem. With the exception of Alfred Hitchock's *Dial M for Murder*, early 3-D films were cheap and sensational science fiction thrillers primarily emphasizing the cleavage of the starlets. It comes as a considerable surprise that 3-D has now become established in cinemas, largely due to viewing devices that make it less likely to give you a headache and the attention of serious directors such as Martin Scorsese. It could well be that we are on the threshold of a new era of the blossoming of 3-D photography. It could also be that it will once again disappear and be filed in the archives of oblivion. That depends on you. The sensibility behind 3-D is to produce an immersive experience heightening the visual sense faculty. As long as this is a priority, and there is a way to market a product, 3-D is likely to endure and continue evolving. Working in 3-D does present a new challenge to the mindful photographer. To make the use of 3-D meaningful you need to compose with a foreground, middle ground, and background that recedes into space. The photographer must be careful to know the limits of how close they can get without inviting eye strain or a doubling of images, and they must generally work with deep depth of field. Seeing photographically in 3-D is very different from our habitual way of looking. It is also not easy switching back and forth from 2-D to 3-D. Keeping the mind open and alert is the same, but learning how to organize what we see into an image is a sea change. Working in 3-D for an extended period of time, such as several years, could very well change the way you make 2-D images for the rest of your career as an artist. It is difficult to go back. However, for a photographer who wishes to experiment, which is to say try new things out, 3-D is a refreshing experience that will shake up your habitual patterns and force you to address the fact that the image exists in your mind, not just on a piece of paper. At the end of the day, experimental photography is not just an exotic process, but more about new ways of seeing and thinking.

1 A gestalt is a contemporary term for a montage in which the whole is perceived as greater than the sum of its parts.

2 A later form of the cyanotype is called a *blueprint*, and was used principally by architects to make copies of their large drawings.

3 The Fotogramme movement took birth at the famous German art school *The Bauhaus*. It was later closed by the Nazis. Moholy-Nagy eventually opened the New Bauhaus at the Chicago Art Institute. That set the template for how art was to be taught in America for many decades to come.

4 A luminogram is a photogram made exclusively with light. No objects are involved.

5 Cliche-verre refers to a camera-less way of making images that look like photograms, yet are repeatable. This is done by placing objects on or in a glass negative carrier in an enlarger in the traditional darkroom.

6 Brian Eno, *Generative Music* in *A Year With Swollen Appendices*, Faber and Faber, London and Boston, 1996.

7 There were three further reasons for the slow development of the medium: secrecy, difficulty, small audiences. The magic lantern show evolved out of a culture of deception. Those ignorant of the projected image could be tricked into believing they were seeing apparitions, hence the need to keep it secret. When the cat was finally out of the bag, so to speak, small audiences would gather, but there were always problems with getting a bright enough image, controlling the unstable energy source by heating lime, and the difficult labor needed to paint slides that wouldn't crack in high heat.

Traditional, Contemporary and Alternative Display

Brian Eno has pointed out that framing devices either attract or insulate meaning.[1] The traditional frame is meant to do two things: firstly to protect your print and secondly to insulate the picture from its surroundings. A traditional frame clearly defines where the artwork starts and ends. This is in stark contrast to a photograph as part of an installation, which is meant to attract meaning through the extended frame of its surroundings.

With regard to traditional framing the method most favored by fine art photographers in the modernist tradition is to first confine your print in a white, cotton rag window mat, and then to enclose it in a simple thin frame made usually of black, white, or gray aluminum, or maple wood and glass or plexiglass. The fine print is regarded as something precious and worth the expense and effort of protection. Sometimes the print will first be dry mounted; other times it will be held in place with the use of large archival corners or strips that allow the print to be removed without damage. Another option is to hinge the print to the back board.[2] The result is a nicely dressed up image separated from its surroundings through the austere elegance of the frame. The viewer is invited to comfortably encounter the photograph as a portable art object.

A contemporary alternative to this way of framing is to eliminate the window mat. This moves the frame right to the edge of the picture, but still separated from the Plexiglas. Thin strips of wood or plastic, called spacers are placed between the print edge and Plexiglas. The print is generally dry or cold mounted to the bottom board to prevent the print from buckling and sticking to the Plexiglas. Another option is an acrylic face mount panel that permanently sandwiches the print between the Plexiglas and the backing material. A lower budget variation on this is to mount on a material such as gator board with a thin protective lamination applied on the surface of the print. These last two options eliminate the need to surround the work with an additional frame, as they can be hung from a hidden frame behind the backing support. This frameless floating look is not as new as most people think. It has come and gone several times in the history of modernism, going back to the early days of the Soviet Union, to the New York Museum of Modern Art in the 1950's, to the display of industrial photography at trade shows in the 1970's.[3] What is new about its use today is the use of archival materials.

Alternative Display

Alternative display is pretty much anything that doesn't employ a standard frame, with or without a window mat. The most basic method is double-stick tape, although this guarantees that the print will be damaged. The photo-based artist Wolfgang Tillmans popularized this approach in the late 1990's. However, his more recent works are conventionally framed, probably due to the insistence of dealers and collectors. Interchangeable frames,[4] tacks, map pins, and scroll-type poster hangers (manufactured or homemade) are also alternatives to the high cost of traditional and contemporary framing. Any photographic image integrated into a sculpture or installation also qualifies as alternative display. The altar-like displays of Christian Boltanski, including strings of lights that illuminate the photographs in a darkened space is an excellent example. Also, the wooden structures specially designed to hold and show hundreds of the photographs of Dayanita Singh in her work *Museum of Chance* is a paradigm shift in the direction of more carefully considering not only what you photograph and how you photograph it, but also how it is received by the public. The mindful photographer needs to learn how to both anchor and let go of their pictures. If it is imperative that what surrounds the photograph will inflect a specific meaning on it, then the artist must tend to that. However, sooner or later a picture takes on a life of its own. Professors and curators in particular will use your pictures for purposes perhaps other than what you originally intended. At some point the photograph no longer belongs to you, but to the public. So be careful what you bring into the world

Archival Practices

The essential sensibility behind archival practices as a photographer and artist is to preserve your work. This, of course, further implies that the work you are doing is in some way precious and worth taking care of. The whole idea of *taking care* is fully in alignment with the practice of mindfulness. That being said, it must also be acknowledged that all things are impermanent. Aware of this fact, we endeavor to take care of the things we use our precious time to bring into this world with a minimum of clinging attachment. In practical terms this means taking steps in the production of making prints free of contamination, as well as keeping our prints, negatives, and files away from corrupting forces. Black and white prints made in the traditional darkroom require different precautions than chromogenic prints made in the color darkroom, which again differ from inkjet.

For black and white darkroom printing you must make sure that your chemicals are fresh and full strength. Shortcuts like using water instead of stop bath will sometimes be revealed in RC prints as subtle dragon-like swirly shapes, and ugly spots will appear on fiber-base paper that have been selenium toned. If your fixer is weak, the print will eventually discolor and emit a powdery acid-like odor that will ruin whatever other prints it comes in contact with. This can also happen by not fully washing the print correctly. Fiber-base paper must be agitated for at least two minutes in hypo-clearing agent prior to being washed in water for a minimum of twenty minutes. It should then be wiped down on both sides with a squeegee and then placed on a screen known as a drying rack to air dry overnight. All other methods for drying prints present a high risk of contamination.

With regard to chromogenic prints, one of the many nearly extinct forms of color printing in the darkroom, one must also be careful that the chemicals are as fresh as possible. Moreover, the processing machine must be maintained with care. Failure to wash down the rollers and gears that feed the print through the machine will result in discoloration and a mottled look to the print. Also, some papers are manufactured with a higher standard of longevity than others, and this should be looked into. The introduction of Fuji Crystal Archive paper in the late 1990's was a watershed in this regard.

If you decide to print inkjet be certain that your printer is set-up with 100% pigmented archival inks and not dyes. Currently, only Epson, Canon, and Hewlett-Packard offer this possibility. Inkjet prints made with pigments should last seventy or more years. This is about the same as a chromogenic print. Black and white prints should last 200 years, and much longer if they are toned with gold, selenium, or sepia.[5] These numbers go down if prints are exposed to a lot of bright sunlight.

To further protect your prints, it is advised to flatten them, and together with a piece of acid-free board place them in clear polypropylene sleeves or almost clear PVC protective sleeves. These should then be stored in the dark within acid-free storage boxes or portfolio cases. If the work is not important to you, then don't take the trouble and expense.

Negatives should be stored in polypropylene archival sleeves. These should be enclosed together with proof sheets in archival storage binders that close on all sides keeping dust out. The extra expense of storing your negatives properly will pay off in the end because you won't have to spend nearly as much time retouching.

There are a lot of different opinions about how to go about archiving digital files. Gone are the days of endless piles of floppy discs and zip drives. External hard drives are now quite affordable; however they are known to fail spontaneously and unexpectedly. Therefore, it is necessary to back up your important photo files at least twice on two separate hard drives. It is advised to keep them in separate locations just in case a thief gets greedy or a fire or flood comes to claim your home. Another option is to keep one back

up in the cloud and one on an external hard-drive. If you don't back up your files, sooner or later they will be wiped out. Like all things, digital media does not last forever. Rather, it only lasts as long as you can access it. Therefore, be sure to migrate your files to different storage devices as plugs and adapters as well as operating systems come and go in the endlessly changing computer marketplace.

1 Brian Eno, *On Being An Artist* in *A Year With Swollen Appendices*, Faber and Faber, London and Boston, 1996. Eno asks: "Do you work 'inside' or 'outside'?

"To work inside is to deal with the internal conditions of the work – the melodies, the rhythms, the textures, the lyrics, the images: all of the normal day-to-day things one imagines an artist does. To work outside is to deal with the world surrounding the work – the thoughts, assumptions, expectations, legends, histories, economic structures, critical responses, legal issues and so on and on. You might think of these things as the frame of the work. A frame is a way of creating a little world around something.

Traditionally that little world isn't given much thought – there's almost a feeling that to invest too much time in that part of the job is to be looking in the wrong place. So a frame on a traditional painting is a standardized object, a set of approximately-all-right cultural odds and ends. If it's an old painting there's a bit of gilding and some molding, and if it's a new picture there's likely to be hard edges and perhaps a flash of aluminum. These are just signs that act more as insulators (was of excluding certain meanings) than attractors (ways of making meanings)."

2 Sometimes it is taught simply to tape the image to the back of the window mat. This is unprofessional in that it is certain to cause permanent damage to the print. Since the purpose of the window mat is to protect the print this is a counterproductive shortcut. It is penny wise and pound foolish.

3 The most prominent example was the famous *Family of Man* exhibition that travelled internationally and was seen by millions of people.

4 The most basic form of frame is called an *interchangeable* frame, known as a *Wechselrahmen* in Germany where it is very popular. It is comprised of masonite backing material, glass, and some clips that hold them together with the print in-between. The simplicity is quiet elegant, although unsuitable for large works.

5 These figures are mere approximations. Not everyone agrees on the longevity of prints, and unfortunately none of us will be around to verify the results.

Questions and Considerations for Critique

It is important to know how your pictures affect people. When we talk about other people's work, we want to show them the same respect and courtesy we ourselves would like to receive in return. Critique is not just about determining what is possibly wrong with someone's work, although that is part of it, but also a forum to appreciate it. If we understand that art is a kind of transaction, it is reasonable to communicate about how pictures work on us. In this regard we can't be wrong. If you tell me that my picture makes you sad, I cannot say that you are wrong for feeling sad. We need to do critique so that understanding can take place. Words and images operate differently. Words tell and photographs show. However, words are all we have in a critique situation so we need to make the best of it.

There is always something you can contribute in a critique. Simply answer the following questions: What do the photographs invite you to imagine, if anything? What do the photographs make you think and feel? What do the photographs tell you about society, if anything? What do the photographs tell you about the photographer, if anything? Does the artwork in question challenge or embrace convention? What could be technically improved, if anything? For example: Was the exposure correct? Is the photograph sharp? Is the depth of field appropriate? Is the contrast too low, too high, or just right? For advanced work you might ask if the display is appropriate. Does it insulate or attract meaning to the image? It is good to ask the artist questions like: What is the title? Where would you ideally like to show this work? However, generally speaking the artist being critiqued shouldn't talk too much about their intentions during a critique because that will influence what others will say and consequently the artist will never know then how the pictures genuinely worked on the viewer.

Describe what you see. Do you like it? Why? What are your criteria? Ask yourself what the work means. Is it participating in a discourse, which is to say a conversation within an art world? If so, which one, and what is the work contributing to that discussion. Understand that the meaning of an image is not fixed, but rather arises through the interdependence of picture, observer, and context. Essentially, identify problems and possible solutions and refine further.

Don't be overly negative. Rather, metaphorically speaking, see the artwork in question as the patient, yourself as the doctor, and your critique as the diagnosis. If the artwork is healthy, so to speak, shower the artist with praises. In other words, identify what is working and why. If the work needs medicine or therapy, that is to say, refinement, try to give useful criticism. The critique should be regarded as a midway point for a less-than-healthy diagnosis. The idea of a redo should be perceived as an opportunity, not a rebuke. Always avoid condescension and try to be humorous. It is up to the artist to apply the advice. The artist may or may not choose to respect your opinion and follow your advice.

Try to remain open without hardening your opinion. As the Zen master Seng Ts'an put it: "Do not seek the truth. Only cease to cherish opinions."[1]

For beginning photography students critique will sometimes focus on technical matters because it takes time to get competent at the craft. However, as you become more advanced, the critique will likely shift toward other concerns. Craft is important, but not as an end in itself. Rather, we should think of craft as a support for the message behind the work, be it poetry or politics.

1 From the text *On Believing in Mind*.

Photography Health and Safety Issues

Problems and Solutions Using the Traditional Black and White Darkroom

One of the advantages of using a community darkroom at a school is that usually the chemicals are prepared for you, and the clean-up is also provided. However, if you decide to set up your own darkroom at home you should be aware of potential hazards, particularly in the mixing of chemicals. Whenever possible use liquid chemicals that only require diluting, rather than powdered chemicals. When powders become air-born they will inevitably be inhaled. Pregnant women in particular should avoid this situation. Precautions for mixing are to always wear gloves, goggles, and use a respirator if dissolving and mixing chemical powder compounds. Make sure there is an eyewash station nearby in the unlikely event of contact.

For both film development and printing you will use developer, stop bath, and fixer, followed by a water wash, hypo clearing agent, and another water wash. It is important to recognize the potential hazards of each stage and take the appropriate precautions. There are many kinds of developers, but what they all have in common is the potential to cause mild skin irritation. Rarely, someone will be allergic and develop a rash.[1] If possible, it is advised to use a developer that contains ascorbic acid (vitamin C) instead of hydroquinone.[2] They both work well, but the former is far safer, although more expensive. Also, when developing film, it is recommended to wear non-powdered gloves. When printing, use tongs and avoid touching the chemicals with your hands. Most people will not be adversely affected by brief contact with diluted developer. If this occurs, wash your hands. In the unlikely event you splash the developer in your eyes, immediately wash your eyes for 15-20 minutes and thereafter seek medical attention.

Stop bath is basically an acetic acid solution. It is toxic in concentrated form, but used for photography only in an extremely diluted form. It is imperative that when mixing the stop bath you follow the AAA rule — add acid after, meaning to add the concentrated acetic acid solution to water. Do not add the water to the acid. Stop bath in concentrated form is particularly harmful to the mucus membranes in the nose, so always prepare in a well-ventilated area.

Fixer, also known as *hypo* is largely a sodium thiosulfate solution. It is only slightly toxic, sometimes causing skin irritation. Some fixers have a strong smell that will be hard to wash off after contact, lingering for quite some time. It is best to avoid contact with the skin by using either gloves or tongs. In this way you will also avoid fingerprints appearing on your prints.

Hypo-clearing agent helps speed up the removal of fixer from films and prints, thereby saving water. It is not toxic in diluted form, however, it is still recommended to avoid excessive skin contact. Simply leave your gloves on, or continue to use tongs until after this stage of the process.

It is safe to dispose of developers and stop bath down the drain, however, fixers should be properly recycled to reclaim the silver content. Also, you must be particularly careful with the use and disposal of selenium toner. Wear gloves, and if possible also a respirator. Do not pour exhausted selenium toner down the drain, but rather collect it in a large plastic container. When full, call your local hazardous waste disposal agency for pick up information. Pregnant women and individuals with kidney issues should avoid use of this chemical.

Processes that use potassium ferricyanide such as intesifiers, reducers, and cyanotypes, should be undertaken with caution. Potassium ferricyanice is only slightly toxic in most traditional darkroom cocktails, but it can be highly toxic when heated or

exposed to carbon arcs. It should be handled and mixed with utmost care, utilizing a respirator and gloves.

In a nutshell, you simply need to cultivate good habits when working with chemicals, whether working in the darkroom or anywhere else. Always read the precautions on the bottle or package before use. Work with the least toxic chemicals possible to accomplish the task at hand. Dispose of them intelligently with respect for the environment. When in doubt, use gloves.

Problems and Solutions Using Computers

Backache

Common health issues with extended computer use include muscle discomfort, stiffness, numbness, tingling, etc. These are generally caused by poor posture combined with cramped work spaces. The best way to defend against such potentially painful problems is to sit as upright as possible at a work station where there is plenty of room to stretch one's legs and look at the monitor around eye level with no neck strain. It is important to take frequent breaks and not work for a stretch of time exceeding one or two hours.

Eye Fatigue

If you work at a computer day after day, all day long, sooner or later you will experience eye strain. The distance to the monitor is fixed, but the eye is accustomed to roving from up close to far away and back again in relatively constant motion. Computer work does not allow this, hence issues may develop. These include soreness, red eyes, either watery or dry eyes, blurring of vision, etc. If any of these symptoms occur it is time to take a break, go outside and look off into the distance. It might be a good idea to take eye drops to help the eyes relax or to simply close them until the discomfort dissipates.

Wrist Fatigue or Damage

Computer work with Photoshop or other graphics programs often requires repetitive subtle wrist movement, particularly if you are doing a lot of retouching. Carpal Tunnel Syndrome (CTS) is the name given for pain and numbness in the wrist. It is more frequent among elderly individuals and women. CTS is often hereditary and associated with other conditions such as arthritis, thyroid imbalance, and diabetes. There is an ongoing debate as to whether or not excessive computer keyboard and mouse work contributes to CTS. In all likelihood it does, although the jury isn't out on that one yet. The solution is the same as for backache and eye fatigue, namely, take breaks often. Better still, try to avoid these problems by working in a good posture that does not put excessive strain on the body and wrists.

Mental Fatigue

Computer work can be exceedingly boring. This tempts individuals to take breaks away from Photoshop into other computer realms, such as checking e-mail and social media. This is not an appropriate break as far as avoiding computer health issues is concerned. It is recommended to stand up, walk, and breathe some fresh air under the open sky. Remember that mindfulness and multi-tasking are incompatible. With a deeper focus and commitment to being in the here and now you will accomplish a great deal more with satisfaction throughout the process. Some people say they work better under stressful conditions. This is a myth. Some tension may be necessary, but not to the degree of causing stress. It's like tuning a guitar; you need to find just the right degree of tension before it becomes stress. If you relax a string too much it will be flat, and if you tighten it too much the note will be sharp or the string will snap. Just so, working at the computer shouldn't put you to sleep or make you agitated. When you are out of balance it is time to take a break. If your eyes hurt, close them. If your feeling stiff, move.

1 This is called elon metol poisioning.

2 Hydroquinone is used industrially to make rubber turn black. Vitamin C is a much preferred alternative.

Glossary of Technical Terms

acutance — In the context of the discussion on film grain in this manual, acutance refers to the relative shape and size of the grain. Traditional grain films have larger and rounder grain, whereas so-called T-grain or tabular grain films have finer grains that are more disc-like and mushy in shape.
adjustment layer — a recommended non-destructive workflow method in Photoshop that allows you to adjust a specific quality of the image, such as contrast, value, color balance, etc., without the changes being permanent.
aperture — the lens opening, expressed numerically as an f.stop.
artifacting — digital noise
B — B is short for "bulb." It is a shutter speed setting that allows the photographer to keep the lens open for as long as the photographer presses on the shutter release. This is accomplished with a device known as a cable release or a remote control.
barn doors — an attachment for studio lights that functions to direct the light more precisely.
beauty dish — a studio light that works very well dimly as a fill light or as the main light, creating a directional-diffused look.
burning — a term for both analog and digital photography referring to the process of making selected areas of a print or file darker. In the darkroom this is accomplished by adding more light to those areas using a burning board.
boom — a studio light stand with a very long extension that allows the main light to hover above the subject near the ceiling.
cable release — a small wire surrounded by cloth or plastic that is screwed into the shutter of cameras for the purpose of triggering long exposures (see B above). Most film cameras and high-quality digital cameras will work with these, however, the button-type shutter releases that were popularized in 1990's film cameras and inherited by entry-level digital cameras will not.
chemigram — a camera-less technique related to the photogram that utilizes chemicals directly on the light sensitive paper.
chromatic aberration — an unclear fringing effect of layered colors caused by a lens failing to accurately focus all the light entering the lens upon the same convergence point. This can be somewhat corrected through digital software customized to a specific camera and lens type.
chromogenic — generically refers to any film processed with C-41 chemicals. The negative is predominantly orange in color.
cliche-verre — a repeatable form of photogram. Materials are placed on a glass negative carrier in the enlarger and then projected onto light sensitive material.
color profile — a color space that is tailored for a specific paper or output. Generally, when using non-Epson papers with an Epson printer, for example, it is advisable to experiment with the recommended ICC color profile for whatever specialty paper you are using. These must be placed in the Library of your computer within the color profiles folder.
color space — a systematic organization of colors dedicated to specific output objectives. For example, sRGB is a recommended color space for the internet or snapshot machine prints, whereas Adobe RGB 1998 is a much larger and richer color space designed for outputting quality inkjet prints.
compression - a flattening out of spatial depth caused by the use of telephoto lenses.

contact sheet — synonymous with proof sheet, a contact sheet is a positive print the same size as your negatives that help you evaluate and locate your archived negatives.
contrast — the dynamic range of values in a negative, print or file. A low contrast black and white photograph is predominantly gray with no deep black or pure white, whereas a high contrast black and white print has a strong black and bright white, but few gray values in-between. "Correct" contrast displays a deep black, a strong white, and a rich gradation of grays in-between.
curves — an option in digital processing that allows the manipulation of both value and contrast, especially the latter. It is superior to the *brightness / contrast* option in that it allows for significantly greater subtly and retention of detail in the shadows and highlights.
cyanotype — an early form of the photogram with a very deep blue instead of black. This process has been utilized by scientists, architects (the blueprint), artists, and children.
depth of field — the overall sharpness or lack thereof in a photograph.
developer — the first step in the film or print developing process in the traditional wet darkroom.
diffused light — a soft, broad, low contrast light such as that on an overcast day.
direct light — a hard, bright, high contrast light such as that of a sunny day with no clouds.
directional-diffused light — a medium contrast light with a definite sense of directionality, such as window light.
dodging — a term for both analog and digital photography referring to the process of making selected areas of a print lighter. In the traditional darkroom this is accomplished through the skilled use of a dodging wand.
DSLR — a digital single-lens-reflex camera. These types of cameras, like their film predecessors the SLR, have aperture settings in the lens and shutter speed settings on the camera body, making the lenses less expensive. They utilize a focal plane shutter to allow the photographer to look directly through the lens when composing. The shutter blacks out during actual exposure.
exposure — the quantity of light that enters the camera. This is controlled by two things a hole (aperture) and how long it stays open (shutter speed).
feather — the softness of an edge controlled by designating how many pixels will be affected.
ISO — the sensitivity of a particular film or digital sensor to light. Low ISO is associated with greater image resolution and less sensitivity to light, making shallow depth of field easier. High ISO is useful when shooting in low light or when stop action is required. A very high ISO will result in either coarser film grain or digital noise.
leaf shutter — a lens comprised of a leaf-like diaphragm within the lens that opens and closes in sync with the shutter speed. Both aperture and shutter speed are within each lens for this type of system. It is generally found in 35mm rangefinder cameras, such as a *Leica* or *Bessa*, and also in many medium format cameras and all large format camera lenses. A leaf shutter is whisper quiet and will sync with flash at any speed.
lens diaphragm — the lens opening formed by metal blades that block light within the lens. They operate like a mechanical iris, usually forming a pentagonal or hexagonal opening when they overlap.
FB (fiber-based paper) — also known as *Baryta* paper, is high quality black and white darkroom paper that contains real silver. It has much richer blacks, whites, and superior tonal separation of the mid-tones than RC or resin-coated paper, which is plastic. FB paper requires longer developing times and extended washing for archival purposes. It curls during the drying process and also "dries down," which is to say, it darkens somewhat as it dries.
f-stop — a numerical designation for an aperture (lens opening). A large f. stop is designated by a small number and a big hole, whereas a small f.stop is designated by a large number and a small hole.

fill light — the second most important light in a portrait studio after the main or key light. It helps reduce the depth of the shadow created by the main light and determines the lighting ratio, i.e. contrast of the image.
film base plus fog — the slight density of the clear part of the film, such as in-between the frames and the sprockets. When making a proof sheet it is important to find the shortest possible darkroom exposure to make the film base plus fog turn black.
film cassette — a small can that contains 35mm film in a light-tight environment.
film leader — the beginning of every roll of film, shaped like an elongated L.
film take-up spool — a spool located within the camera that receives the film leader and winds the film inside the camera after each exposure.
film plane — the area inside the camera upon which the lens focuses.
fixer — the third step in traditional film and print darkroom processes, the fixer clears and hardens the image so that it can be viewed in the light.
focal-length — the focal length of a lens determines to what degree the system of optics employed diverges or converges light. A wide-angle lens will spread the light, whereas a telephoto will tighten the beams the light.
focal-plane shutter — typically employed in SLR and DSLR cameras, a focal plane shutter involves a curtain inside the camera that opens and closes in sync with the shutter speed. Cameras of this sort are limited to a narrow sync range for flash.
focusing screen — a small rectangular screen within the camera typically made of fresnel glass with a microprism or split-image for precise manual focusing.
focusing sheet — a piece of enlarging paper placed in the enlarging easel for the purpose of focusing. The thickness of the paper must be taken into consideration to achieve maximum sharpness. Failure to use a focusing sheet may result in a print with mushy grain.
foreshortening — distortion caused by the use of wide-angle lenses.
format — film, sensor, and camera size. 35mm film is small format. 120 film is medium format. Sheet film is generally large format.
golden hour — the early morning after dawn and the late afternoon before sunset. To say it is an hour is merely a euphemism. It lasts longer in summer than winter, and also longer the further away you get from the equator. Golden hour light lengthens shadows and accentuates texture.
grain — silver halide crystals or dyes that aggregate to form an image.
grain focuser — a device used in the darkroom used to focus grain. It is placed on an enlarging easel holding a focusing sheet, and the bellows of the lens is fine-tuned until the film grain is brought into precise focus.
holding bath — a tray filled with water where prints are left floating after fixing and before washing.
hypo-clear — the last step before the water rinse in the film developing process. It is also used to speed up the washing of fiber-based papers and consequently saves a lot of water.
incident meter — is used primarily by studio and cinema photographers, however it can also be applied in the field. It measures the intensity of the light source rather than the intensity of the light being reflected off objects.
JPEG — stands for "Joint Photographic Experts Group," is a form of "lossy compression" used in digital photography for snapshots, e-mail images, and images for the web. The color space and image size is relatively small compared to TIFF and PSD formats.

Kelvin temperature — is a numerical system that measures the warmth and coolness of light in any given situation. 5600˚ Kelvin is daylight and 3200˚ or 3400˚ Kelvin are tungsten, which is considerably more yellow (less blue).
key light — also known as the main light, the key light is always the brightest light in any studio lighting set-up. The only shadow visible on the main subject should be cast by the key light.
latitude — is the maximum capacity of any given film or digital sensor to render detail in the highlights and shadows. For example, if exposed and developed properly black and white film has far greater latitude than color positive transparency film or digital capture. This is likely to change as high-end digital cameras improve.
levels — an option in digital processing that allows the manipulation primarily of value, and to a lesser extent contrast.
lighting ratio — the difference in brightness between the main light and fill light. For example: if the main light and fill light were equally bright, the lighting ratio would be 1:1. If the main light were twice as bright (1 f. stop difference), the ratio would be 2:1. Typical lighting ratios for portraiture are 3:1 or 4:1.
lumen print — a color photogram made with black and white enlarging paper. Objects are placed on the light sensitive paper in bright sunlight for anywhere from ten minutes to several hours. They will then turn brownish, and sometimes even somewhat magenta. This technique was pioneered by Jerry Burchfield in the 1990's.
luminogram — is a photogram made with only light and no objets.
macro lens — a lens specially designed for extreme close-ups.
magic hour — between sundown and twilight there is a short window of time, generally far less than an hour, when the light is very pastel and soft. It is generally regarded as a romantic light. How long it last depends on where you are in relation to equator and what season it is. The magic hour will be shorter towards the equator and during winter, and vice-versa.
microprism — a circular and central section of the viewfinder that allows for sharp manual focusing.
MILC — mirror-less interchangeable-lens camera
nondestructive — digital editing choices that can be easily undone
normal lens — a lens designed to give the least amount of distortion, i.e. the lack of foreshortening or compression, and duplicate human vision insofar as that is possible photographically.
photogram — is the generic name for all camera-less photographs. A classic photogram is made by laying objects of varying densities on light sensitive darkroom enlarging paper, thereby casting a negative image.
pinhole camera — a camera with no lens, only a very tiny hole.
pixel — the digital equivalent of grain, in the shape of a perfect square that is numerically encoded at the time of exposure, and altered thereafter through digital processing.
proof sheet — see *contact sheet*
PSD — designates *Photoshop document*
pulling — the deliberate shortening of film development to reduce contrast. The term *contraction* is used in the *zone system*.
pushing — the deliberate lengthening of film development to increase contrast. The term *expansion* is used in the *zone system*.
rangefinder — a camera that uses an optical viewfinder that focuses, rather than looking directly through the lens. These cameras and the lenses that work with them, are generally more expensive. They work well in low light situations and are very quiet. They are generally lighter in weight than other cameras of the same format.

RAW — a digital file with uncompressed data. Working with Raw files allows the photographer to make more decisions regarding how the image will ultimately look. The cooking of a Raw file generally takes place in Adobe Camera Raw, Adobe Lightroom, and Phase One software.
RC (resin-coated paper) — entry level darkroom enlarging paper with a plastic (instead of paper) base. It is less expensive, easy to wash, and doesn't curl much upon drying, however it is not as tonally rich as fiber-based paper.
resolution — Reality has no resolution, only images of it. High resolution means lots of clarity and detail, and low resolution is equivalent to visual noise. High ISO contributes to low resolution, as does small film formats and small sensors and low light.
reticulation — worm-like exploded grain caused by drying film at much too high a heat.
safelight — a special wavelength of amber light for illuminating a darkroom.
scrim — a large semi-transparent material usually made of cloth or nylon that is secured in an aluminum frame. The scrim is typically placed between the light and the subject to diffuse the light and render it softer.
selenium toning — a chemical used after hypo-clearing in the traditional darkroom printing process. It deepens the black and with prolonged immersion renders the print somewhat purplish in color. Selenium toning improves the archival quality of a print significantly.
sensor — a light sensitive electronic device that encodes exposure numerically as pixels.
shutter speed — the length of time a shutter stays open. Together with the aperture setting, shutter speed controls exposure.
split-image prism — a focusing device found in rangefinder cameras and some single-lens-reflex cameras. When the split image within the prism is brought into one, the image is focused.
SLR (single-lens-reflex) — a camera system utilizing mirrors that allows the photographer to see through the lens, which is interchangeable.
smart objects — a complex non-destructive method for working within Photoshop. Smart objects are essentially an alternative to adjustment layers that reduce file size.
snoot — an elongated funnel-shaped attachment for studio lights that tightly narrows the light's directionality.
soft box — an attachment for studio lights that significantly softens and diffuses the light while sustaining directionality. The larger the soft box, the greater the diffusion. The key light with a soft box is ideal for portrait lighting unless an extremely harsh effect is required. It is usually attached to a *boom* and hovers overhead.
spot meter — a reflected light meter, either analog or digital, that measures only a small portion of the image area.
stop bath — is the second stage in darkroom film and print processing. It is composed of an acetic acid solution mixed with water that quickly halts the developing process, providing greater control and preserving the longevity of the fixer that comes next in the process.
telephoto lens — is like a telescope in that it brings whatever is viewed closer. One side-effect of telephoto lenses is compression, a flattening-out that reduces the perception of spatial separation.
tethering — is a method for electronically connecting a digital camera to a live monitor or projector. It is principally useful in the studio.
TIFF — stands for "tagged image file format." It is the industry standard digital file format for professional and art photographers.

value — is the relative *lightness and darkness* of an image or print, be it a photograph, drawing, or painting. Some photographers prefer the term "print density." For computer monitors and television sets the term *brightness* is more appropriate.

variable contrast filter — a filter placed directly under the enlarging lens for the purpose of controlling contrast in the black and white darkroom. These filters are numbered from 00 through 5, the higher number, the higher the contrast. Filters 00 - 3.5 are of equal density, making exposure changes to the image minimal. Filters 4 - 5 are double the density, requiring the printer to either double the exposure time of the enlarger, or opening one f. stop. They are sometimes called "multi-contrast filters."

viewfinder — is the name of both a type of camera, and a part of the camera. A viewfinder camera is a very cheap version of a rangefinder camera, usually with little to no aperture and shutter speed control. The viewfinder is the window you look through in order to see the subject and compose the image. Large format view cameras and mirror-less cameras do not have a viewfinder.

wetting agent — is the last stage of the film development process. It is a concentrated soapy substance gently mixed with water to prevent water spots from drying on the film surface.

white balance - is a digital method for setting color temperature.

wide-angle lens — any lens with a broader than normal angle of view. One side effect of using a wide-angle lens is foreshortening, a bent distortion particularly apparent in the corners of the image.

List of Photographs

Cover — *Veiled Seagull, Santa Cruz* from the series *Threshold Spaces*, 1998
Contents — *Crow Looking Up*, from the series *Sending Out the Crow*, 2013
Page 2 — *Square Light, Union Station, Downtown Los Angeles*, from the series *Koku*, 1997
Page 5 — Round Light, *Union Station, Downtown Los Angeles*, from the series *Koku*, circa 2000
Page 6 — *The Red Wheelbarrow*, New York, circa 1999
Page 9 — *Jin*, from the series *The Activity of Openness*, 2009
Page 11 — *Entry*, from the series *Threshold Spaces*, 1998
Page 13 — *Camera Obscura, Santa Monica Palisades Park*, from the series *Koku*, 1997
Page 14 — *Self-Portrait with Mirror, Venice*, from the series *Sending Out the Crow*, 2013
Page 17 — *Walkstreet with Palm, Venice*, from the series *The Walkstreets of Venice*, 2017
Page 22 — *Trajectory*, from the performance piece *Yo Yo Trajectories*, 1983
Page 23 — *Rhein Spiral Stairway*, from the series *Uferspaziergang* (River Walk), 1993
Page 24 — *Fast Bike Under Bridge*, from the series *Uferspaziergang* (River Walk), 1993
Page 37 — *Prayer Flags, Orgyen Chö Dzong, New York*, from the series *That Which Holds*, 2010
Page 38 — *Tree with Prayer Flags and Prayer Wheels, Urgyen Samye Chöling, France*, from the series *That Which Holds*, circa 1991
Page 39 — *Erich Printing Prayer Flags, Urgyen Samye Chöling, France*, from the series *That Which Holds*, circa 1991
Page 46 — *Storm Drain Runnoff, West Cliff Drive, Santa Cruz, Santa Cruz County*, from the series *Watershed Edge*, 2005
Page 47 — *Orchid and Lamp Offerings*, from the series *That Which Holds*, circa 1999
Page 48 — *Natalie with Shadow*, from the series *Sending Out the Crow*, 2011
Page 49 — *Kaoru Kakizakai in concert at Cal Arts*, 2012
Page 50 — *Erich Heimbach*, circa 1995
Page 51 — Terra Fragile, from the series Koku, circa 2004
Page 52 — *Ocean Park Avenue Light, Santa Monica*, from the series *Sending Out the Crow*, 2013
Page 53 — *Post Office and Sky*, from the series *The Floating Fire*, 1998
Page 54 — *Stone Woman*, from the series *Sending Out the Crow*, 2012
Page 55 — *Smiley*, from the image map *The Accidental Tourist*, 2014
Page 56 — *String of Lights* from the series *The Floating Fire*, 1998
Page 68 — *Converse*, 2012
Page 85 — *Are You Digital Yet?,* 1998
Page 90 — *Bike and Umbrellas, Hida, Japan*, 2007
Page 92 — *Sawtelle Fish*, from the series *Westside LA Japan*, 2008
Page 93 — *Praying Rock at Four Winds*, from the series *Koku*, 2016
Page 94 — *Under Rheinbad*, from the series *Uferspaziergang* (River Walk), 1993
Page 95 — *Pico Storm drain, Santa Monica, Los Angeles County*, from the series *Watershed Edge*, 2005
Page 96 — *Fruit Stand near Half Moon Bay*, from the series *Threshold Spaces*, 1998
Page 98 — *Iron Mushroom*, from the series *Uferspaziergang* (River Walk), 1993
Page 103 — *La Cienega Irony*, from the series *The Activity of Openness*, 2014
Page 108 — *Art Gallery Sign,* from the ongoing series *Welcome to America,* 2018
Page 116 — *Gas Station, New York City*, from the ongoing series *Welcome to America*, 2014

Page 121 — *Quiet Please*, Brentwood Country Mart, from the ongoing series *Welcome to America*, 2016
Page 127 — *Self-Portrait with Circles of Confusion*, from the series *Threshold Spaces*, 1998
Page 130 — *Dad* (I. Earl Heckerman), circa 1995
Page 134 — *Masa (Masakazu Yoshizawa) in Kawai*, Japan, 2007
Page 136 — *Top of Tengui*, circa 2011
Page 137 — *World Peace Dorje*, circa 1999
Page 138 — *Sea Glass*, 1977
Page 141 — *Offering Lamps*, from the series *That Which Holds*, 2005
Page 143 — *Spot On Sunset*, from the series *The Floating Fire*, 1998
Page 145 — *Appenzell Gutter*, from the series *The Floating Fire*, 1996
Page 147 — Greens Restaurant Window, from the series The Activity of Openness, 2009
Page 146 — *Atascadero State Beach, San Luis Obispo County*, from the series *Watershed Edge*, 2012
Page 151 — *Mouth of the Pajaro River, North of Moss Landing*, from the series *Watershed Edge*, 2005
Page 152 — *White Icosahedron*, from the series *Lux*, 1990
Page 154 — *Haiga Koshihikari / California*, from the series *Global*, 2007
Page 156 — *Long Life Ribbons*, circa 1992
Page 171 — Ficus, Marina del Rey, from the series *Sending Out the Crow*, 2011

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About the Author

Ed Heckerman holds a BA in Studio Art from Sonoma State University and an M.F.A. from California Institute of the Arts. He has taught photographic theory and practice at UCLA, Art Center College of Design, Claremont Graduate University, California State University, Long Beach, and California State University, Northridge. He is currently Associate Professor of Photography at Cerritos College. Additionally, Ed has worked as a documentary photographer at the Human Geography Institute, University of Basel, Switzerland. He has exhibited widely at humble addresses in both Switzerland and The United States, including Cardwell Jimmerson Contemporary Arts, Raid Projects, LAX, and Beyond Baroque. His work has been published in Kyoto Journal, Blind Spot, and X-Tra Contemporary Art Quarterly.

Ed Heckerman also teaches meditation and leads group practices at Yeshe Nyingpo in Santa Monica.