Sternberg's Maxims, Dietrich's Face: Distinguishing Cinematographical from Photographical Lighting

Evan Wm. Cameron

Professor Emeritus
Senior Scholar in Screenwriting

Graduate Programmes,
Film & Video and Philosophy

York University

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By the time cinematography became a craft during the second decade of the 20th century, photography had been an art, a business and a tool of exploration for more than fifty years. Studio photographers had refined their procedures into precepts of craft hardly distinguishable from those of today, maxims constrained by the scope and limits of the photographical effect and by the available tools and technologies with which to manipulate it.

Photography's Constraints

The constraints on photographical lighting derived from two roots:

(1) the 2-dimensionality, except under extraordinary circumstances, of photographs depriving them of the rudimentary cues for perceiving distinctions in depth among the objects seen within them; and

(2) the nature of the physical causes of the photographical effect.

Of (1) I shall say nothing. (2), however, requires unpacking.

The visual mechanism of a human being, when suitably adapted, can perceive luminances that differ by a factor of more than ten billion (10^{10}, or 34 stops):

When dark adapted for 10 or 12 hours, one can perceive luminances as low as one millionth of a millilambert (10^{-6} millilamberts);

When adapted contrarily, one can tolerate luminances of nearly 16,000 millilamberts (10^{4+} millilamberts).

The iris of the eye adapts from about f/2 to f/8, the retinal sensitivities shifts and the neural networks impose a logarithmical compression, as in hearing, permitting us to register the remarkable range of luminances we do.

But what of the latitude of photographical emulsions? An emulsion consists of grains of silver halide suspended within, and separated by, a gelatin environment. Successful photography requires some but not all of the grains to convert to silver. A grain begins

to convert to silver, we suspect, whenever the light energy incident upon it exceeds a threshold *inversely proportional to the size of the grain*. But therein lies the problem.

Were all grains equally sensitive to light (were they of the same size, that is), every emulsion would have vanishingly small latitude: all grains would convert to silver in areas receiving energy above the threshold, while no grains would convert in areas receiving less with no gradation between. Fortunately, therefore, all grains within an emulsion are not equally sensitive (they differ, that is, in size).

Conversely, were every area of our emulsions to contain an unlimited number of grains having *en masse* an unlimited range of sensitivities, our emulsions would have unlimited latitude and therefore perfect contrast. Because sensitivity is proportional to grain size, however, we cannot make such emulsions. We cannot manufacture emulsions whose surface areas are simultaneously sensitive under a given exposure to subtle differences among both high and low luminances, for the larger grains necessary for high sensitivity preclude the presence within the same space of a sufficient number of smaller grains.

Our photographical emulsions, therefore, have limited exposure ranges. Even those of widest latitude cannot accurately register luminances that differ by a factor of much more than two or three hundred (circa 8 stops), while our matte printing materials cannot customarily reproduce luminances differing by a factor greater than twenty-five (circa 4-and-one-half stops). None can encompass the luminances of a sunlit summer scene that may well differ by a factor of 800 or 1000 (ten stops), much less match the 10 billion (34 stop) 'exposure range' of the human perceptual system.

Fortunately for photographers, the human perceptual system cannot differentiate luminances that differ by a factor of more than 100 (circa 7 stops) at any one level of adaptation, no matter what the actual luminance levels may be. Optical projection from film transparencies with good equipment in a perfectly dark room may therefore approximate the visual impression of a genuine high-contrast scene (an outdoor vista on a clear day, for example). Nevertheless, if photographical emulsions are to be used to register the luminance patterns of the world to impress us naturally, we must select with care the times and places in which to expose them.[1]

[1] For an interesting recent discussion of much of the pertinent data now known or conjectured about the scope and limits of vision and its relevance for constructing film and television systems, see William F. Schreiber, "Psychophysics and the Improvement of Television Image Quality", *Journal of the Society of Motion Picture and Television Engineers*, August 1984, pages 717-725.

Photography's Problems

From these constraints arose the four cardinal problems of photographical lighting: exposure, compression, separation and contrast.

> **Exposure:** to insure that area of middle luminance in a scene (areas near to 18 per cent – grey card – reflectance) are registered at or near the midpoint of the useful density range of the emulsion;
>
> **Compression:** to insure that areas of excessively high or low luminance are manipulated to register within the useful density range of the emulsion (that is, within the 'straight line' portion of the characteristic Hurter & Driffield curve for the filmstock);
>
> **Separation:** to insure that foreground and background objects are distinguishable within the 2-dimensional photograph; and
>
> **Contrast:** to insure that the perceived difference in brightness between areas of the photograph is as similar as possible (usually) to that perceivable between comparable areas of the scene.

The problem of contrast has a messy twist worth noting here. Since emulsions have restricted latitude, objects of middle luminance (faces and their shadows, for example) will reproduce with excessive contrast unless their luminance difference is *attenuated* during photography. Since emulsions, however, are subject to light scattering from lens flare, etc., and since light scattering affects dimmer objects most, objects of low luminance, for example, will reproduce with insufficient contrast with respect to objects of middle luminance unless the luminance difference is *accentuated* during processing and printing. Unless one is careful, solving the first problem will aggravate the second, and conversely: things of middle luminance that should appear slightly darker will appear too dark, while things of low luminance that should appear much darker will appear insufficiently so. (But more of this below.)

Photography's Early Tools

We forget, sometimes, how few and poor were the tools with which early photographers solved their problems – how difficult it was, for example, to collect and focus enough light onto an emulsion, but not more than enough, to register an image.

Emulsions: Manufacturing emulsions of consistent sensitivity, batch to batch, was nearly impossible during photography's formative years. The problem was less critical when emulsions were slow, but as their quickened it became intolerable.

George Eastman, by 1913, was bothered enough to open a research laboratory and assign the problem to its founder, S. E. Shepard. It took ten years, however, before a prime culprit was identified (1923): gelatin is made from cows, cows eat grass and some grass (but not all) contains traces of sulphur that aberrantly sensitize silver halides. The discovery precipitated a revolution in sensitization research and quality control, but note how late it came! The quickening of emulsions did not occur quickly.

For nearly 70 years emulsions were orthochromatical at best, being sensitive only to short-wave (blue-green making) radiation; hence most of the energy impinging upon them unregistered. Their slowness was compounded, as well, by the absence of sensitizing dyes. (Ever wonder why early photographers photographed no sunsets?)

Ponder, for a moment, the trajectory of emulsion research and quickening speed. Prior to 1880 or thereabouts, shutters on cameras were unnecessary, for exposures of less than half-a-minute were unusable. Iris diaphragms for lenses were uncommon before 1900 (Waterhouse 'stops' – metal tabs punched with holes of various sizes, as in older Spectra meters – were inserted behind the lenses to achieve f/stop control as needed). The first fully panchromatical dye was not discovered until 1904, and it took twenty years thereafter before the first panchromatical roll film was in general circulation. Synchronous sound had already come to the cinema before Eastman's first panchromatical movie film was in general use within the industry (1927).

From then on, though, advances in sensitization occurred rapidly. C. K. Mees estimates that the Eastman laboratories developed, on the average, one new sensitizing dye every *day* between 1930 and 1950;[2] and we know that the effective speed of Eastman emulsions has doubled every ten years since then. Extrapolate backwards along the trajectory, and one can understand when early portrait photographers braced the heads of their subjects during exposure!

Lenses: Slowness was unrestricted to emulsions. Lenses were slow as well (see above remark on iris diaphragms) and often uncorrected. And, ironically, as emulsions became increasingly panchromatical and hence faster, the problems of colour aberration

[2] C. K. Mees, "History of Professional Black-and-White Motion-Picture Film", *Journal of the Society of Motion Picture and Television Engineers*, Volume 63, October 1954 (reprinted in Raymond Fielding (editor), *A Technological History of Motion Pictures and Television* (Berkeley and Los Angeles, University of California Press, 1967), page 126).

multiplied. (The sharpness of early photographs was due in no small part to lenses having to focus only short-wave (blue-green making) radiation – the only energy the emulsions could register.)

Lights: Sources of artificial light were seldom available to early photographers, and when available were cumbersome. If tungsten (reddish), they were largely unregisterable until late in the 1920's.

Measuring tools: Exposure meters, and other instruments of sensitometry, were undeveloped or unreliable until well into the 1930s.

Photograph's Solutions

How, then, did early commercial photographers solve their problems? By restricting their choices and hence their chances of error.

They standardized materials, tools, techniques, and processes as much as possible; determined their scope and limits (the speed and latitude of emulsions, for example, and the sharpness and contrast of lenses); and then extended their knowledge through cautious emulation and annotated trial and error.

The resulting maxims of craft, conservative and sensible, encompass to this day the core techniques of commercial photographical lighting.

Maxims of Commercial Photography:

(a) Standardize materials and production situations (emulsions, cameras, lenses, studio configurations and procedures, processing and printing materials and techniques);

(b) Determine exposure;

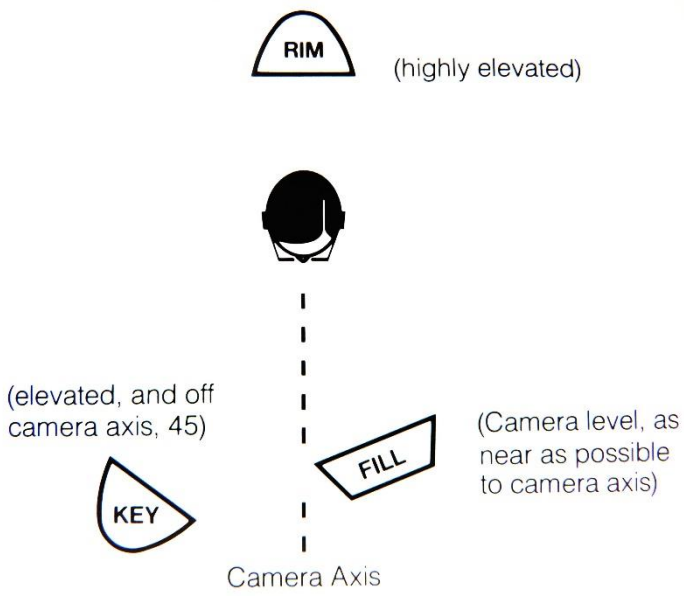
(c) Compress, and begin separation and contrast control by using the three-light portrait technique and customary lighting ratios for faces (see below);

[(b) and (c) may occur in reverse order]

(d) Separate foreground from background objects by keying to different (grey card) levels;

(e) Compensate for contrast lost through light scattering by increasing gamma of prints.

Three-Light Portrait Technique:



Customary Lighting Ratios for Faces:

Face (highlight to shadow):	3:1 (1½ stops), 4:1 at most;
Face to illuminated object (lamp):	4:1 (2 stops), 6:1 at most;
Face (interior) to face (exterior):	4:1 (2 stops), 8:1 at most;
Face to backdrop (BBC-TV news):	1½:1 (½ stop), 2:1 at most.

Note how neatly early photographers solved the two-fold problem of contrast mentioned above. When photographing a face, for example, they would use the 3-light portrait configuration and the customary rules of thumb for balancing luminance ratios for faces (above) to achieve modelling while *overly attenuating* the contrast, perhaps estimating the effect visually by viewing the scene through a piece of blue glass – an accurate technique when using orthochromatical film. When preparing a print, however, they would then process to a higher than normal gamma, compensating thereby for the contrast lost on objects of low luminance through light scattering (in

accordance with our standard quadrant transformations) while compensating simultaneously for the overly attenuated facial contrast incurred when photographing.

Cinematography's Problems

Cinematography, like photography, employs photographical materials and processes. When cinematography began, cinematographers faced the four cardinal problems of photographical lighting: exposure, compression, separation, and contrast. Unsurprisingly, therefore, they assumed the maxims of photographical method as well.

Cinematographers soon came to believe, however, that they must be facing two additional problems of little consequence to photographers.

(1) Perceived graininess; and

(2) Discontinuities of lighting direction among shots of a scene encountered in sequence.

Of the latter problem I shall say little. One's sense of the space within which an event occurs depends upon one's perception of a consistent and unvarying pattern of light falling upon the scene. Cinematographers had to induce this sense of spatial continuity through a success of shots separately lit – a problem unknown to photographers.

Of the problem of perceived graininess, however, much more must be said. We now know that the random distribution of the grains of silver within an emulsion suffices to cause perceived graininess (no clumping mechanism is required).[3] An exposed and process emulsion, whether in a photograph or in a motion picture, has a granular distribution. Why, then, was perceived graininess taken to be a problem by cinematographers but not by photographers? Four reasons were commonly advanced for thinking it so.

[3] See relevant passages of D. J. Corbett, *Motion Picture and Television Film: Image Control & Processing Techniques* (London and New York, Focal Press, 1968).

Reason #1:

Within the limits of reciprocity, equivalent densities can be achieved within an emulsion in either of two ways: by exposing intensely and developing unintensely, thus creating many small clusters of silver near to one another; or, conversely, by exposing unintensely and developing intensely, thus creating a few large clusters of silver far from one another. The densities are equivalent, but the perceived graininess of the latter exceeds the former.

Photographers could reduce the perceived graininess of their photographs by prolonging exposure during photography and printing while curtailing development, thus insuring that the boundaries between areas within the negative and within the print would be defined by finer rather than coarser clusters of silver. They could also use larger negative materials when doing original photography (plates or transparencies) from which finer-grained prints could then be made.

Cinematographers, however, were constrained to exposing quickly onto small (35mm) and coarse-grained emulsions when originating and printing, and then to developing intensely, thus insuring that the boundaries between areas within the negative and within the prints would be defined by coarser rather than finer clusters of silver. (By 1930 the standard shutter speed for original cinematography was already a quick 1/48 of a second, and if one were printing a 90-minute feature film, containing nearly 130,000 frames, one couldn't spend 20 or 30 second printing each frame.)

Reason #2

Photographers, as we have noted, were accustomed to achieving natural contrast in prints by overly attenuating the contrast between areas of middle luminance during photography (faces and their shadows, for example), and then processing to a higher than normal gamma to compensate both for the contrast lost on objects of low luminance through light scattering and for the overly attenuated facial contrast incurred when photographing.

Photographers could achieve natural contrast in this way. But how could they do so without loss of latitude and increased graininess?

They could use the techniques mentioned in Reason #1, of course; they could also produce prints on most occasions only one generation removed from the original negative, thus reducing the chances of compounded graininess and of significant latitude loss through light scattering; and lastly, when printing, they could dodge or

burn-in selected areas of the negative likely to be lost through the shrinking latitude caused by hyping the gamma when processing.

Cinematographers, on the contrary, were forced to release prints 2, 3, or even 4 generations removed from the original negative with compounded graininess and contrast loss at each step, and often with latitude shrinkage of a stop or more between the negative and the final prints. Contact printing, the only feasible technique for producing multiple prints of feature-length movies, permitted no dodging or burning-in of selected areas within a frame except under extraordinary and costly circumstances. And lastly, movies had to be projected by pushing enormous amounts of light through lenses onto screens upon which significant amounts of extraneous light often spilled, thus increasing the chances of significant contrast loss through light scattering and shadow reduction.

Reason #3

Photographers could count on their prints being viewed, on most occasions, by perceivers with normal visual adaptation and hence normal visual sensitivity.

Cinematographers, however, were constrained to having their prints viewed under conditions of dark adaptation and hence heightened visual sensitivity, after projecting them across great distances onto large screens, thus insuring that the coarse granular structure of their relatively small frames (35mm) would often be magnified at least 250 times (lateral ratio), thus potentially drawing maximum attention.

Reason #4

Graininess is perceivable only if one's attention is drawn to it, and one's attention is seldom drawn to anything for which no standard of comparison or assessment is readily available.

The granular structure of a photograph is immobile and *sui generis*. The graininess of a photograph remains unperceived, therefore, or perceived unproblematically, except under extraordinary conditions (available side-by-side comparisons, for example, or `grains' the size of billiard balls).

To achieve the cinematographical effect, however, one customarily registers 24 distinct photographs of a scene every second, each projected twice. No graininess is perceivable in areas of high or low luminance. In unbroken regions of middle grey, however, the granular structure of the image changes 24 times per second, and the change is readily

perceivable as a mottling of the region – as if the grey surface were continually reconstituting itself, which indeed it is.

Cinematography's Solutions

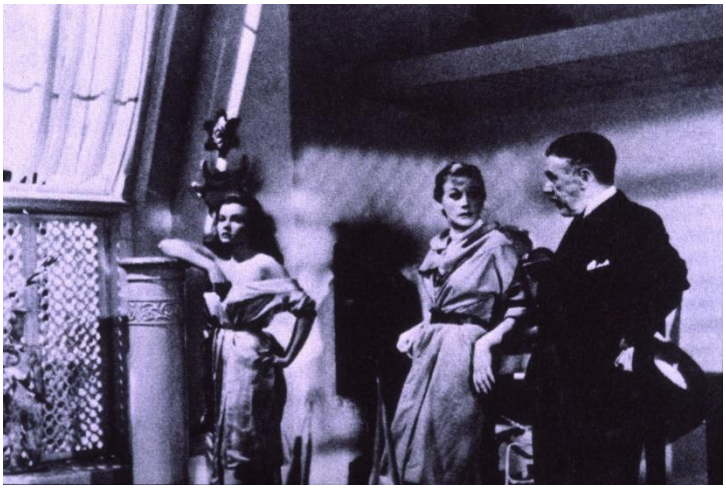
To avoid perceived graininess and the discontinuities of direction in lighting, cinematographers added two goals learned to play a two-fold game.

(a) To decorate the areas of middle grey within the frame; and

(b) To light each scene from a perceived single dominant direction.

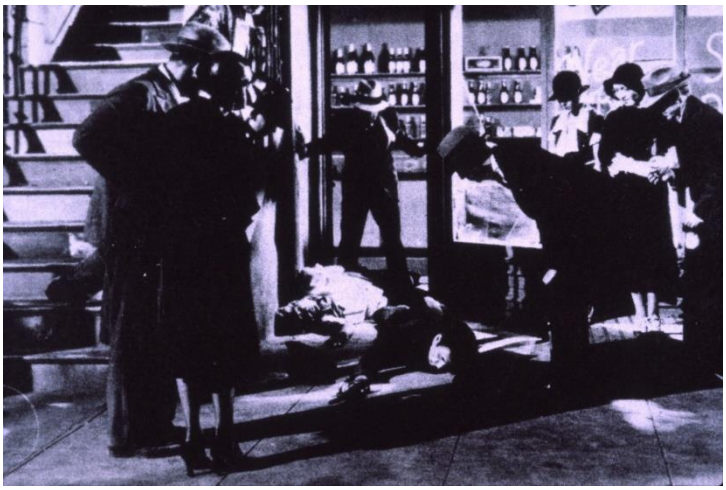
By breaking up the regions of middle grey with patterns of light, cinematographers insured that one's attention – if wondering about – would focus on the patterns rather than the graininess.

YOU ONLY LIVE ONCE, 1937 (director: Fritz Lang; cinematographer: Leon Shamroy



THE SNOWS OF KILIMANJARO, 1952 (director: Henry King; cinematographer, Leon Shamroy)

By establishing a single prevailing direction of light within all shots of a scene, they insured that one's spatial sense would be constrained in the cinema as simply and naturally as in one's everyday environment, for, as Sternberg once reminded James Wong Howe, "The sun throws only one shadow!".[4]



SCARFACE, 1932 (director: Howard Hawks; cinematographer: Lee Garmes)

[4] Kevin Brownlow, *The Parade's Gone By . . .* (New York, Ballantine Books, 1968), page 231.

By 1930, therefore, studio cinematographers were accustomed to restricting their choices when lighting according to maxims of craft akin to those of commercial photographers – though more extensive. Then, as now, knowledge of the latitude ranges of emulsions (see below) and of the customary lighting ratios for faces (see above) were part of the mental baggage of every competent cinematographer.

Maxims of Studio Cinematography:

(a) Standardize materials and production situations (emulsions, cameras, lenses, studio configurations and procedures, processing and printing materials and techniques);

(b) Determine exposure;

(c) Compress, and begin separation and contrast control by using the three-light portrait technique and customary lighting ratios for faces (see above);

[(b) and (c) may occur in reverse order]

(d) Separate foreground from background objects by keying to different (grey card) levels;

(e) Decorate areas of middle grey;

(f) Light each scene from a single dominant direction;

(g) Compensate for contrast lost through light scattering by increasing gamma of prints.

Standard expectations of latitude:

Colour negative film:	125:1 – 7 stops (200:1 at most)
	NEVER UNDEREXPOSE!
Colour reversal film:	64:1 – 6 stops (100:1 at most)
	NEVER OVEREXPOSE!
Colour for TV:	32:1 – 5 stops (64:1 at most)

The Question

The maxims of studio cinematographical lighting, like those of commercial photographical lighting, were undeniably effective: many of our finest films took form within their constraints. They were useful – but were they necessary?

By 1930 it had become apparent that photographers could violate their maxims only at great risk or under conditions of extraordinary compensation. Portraits containing excessive shadows, abnormal contrast, lack of separation, or (later) unnatural colour shifts, for example, remained singularly unappreciated by most observers when compared to those of customary appearance. (If, indeed, the National Portrait Gallery of London is exemplary, our standards of portraiture – painted or photographed – have changed little in five hundred years.)

But what of the maxims of studio cinematography? Were they inviolable as well? Not obviously, for counterexamples had existed since the dawn of cinematical creation.

From the time of Lumière (1895), some cinematographers had persisted in making movies under non-studio conditions: newsreel, documentary, and propaganda films. These cinematographers could usually control only their exposure, exercising little or no control over compression, separation, contrast, perceived graininess or lighting during either shooting, processing or printing.

By the middle of World War II, indeed, the films of Grierson's 'boys' in Britain (Jennings, Watts, Wright, Cavalcanti), Leni Riefenstahl in Germany, Capra's unit in the United States, etc., were being shown in large theatres to large audiences, often back-to-back with major studio productions. Astonishingly, audiences seemed to respond to the

non-studio films – and hence to their cinematography – as readily and deeply as to the others.

> But if the maxims of studio cinematography were essential, like those of photography, how was this possible?

The prevailing assumption of most studio cinematographers of my acquaintance, then and now, was that audiences compensate for inferior cinematography when viewing documentaries and newsreels, but they do not compensate for inferior cinematography when viewing studio productions. Why not? No one of them, without begging the question, bothered to say. If true, the assumption explained the response but only to raise the key question:

> Do audiences perceive cinematographical differences between studio and non-studio productions, compensating for the deficiencies of the latter, or do they perceive no differences at all?

The answer, in hindsight, lay ready at hand within the studio tradition itself.

Sternberg's Answer

Between 1929 and 1935 Josef von Sternberg directed six films starring Marlene Dietrich. Sternberg, by all accounts, including his own, was a difficult human being. He was also, however, a lighting stylist of unprecedented ingenuity and persistence.

What did Sternberg do in the Dietrich films, assisted early on by cinematographer Lee Garmes and later by Bert Glennon and Lucien Ballard? He followed two maxims that he later articulated that demolished once and for all time the myth that the customary techniques of studio cinematographical lighting were essential.

(1) Put something white in every shot; and

(2 Eliminate the fill light.[5]

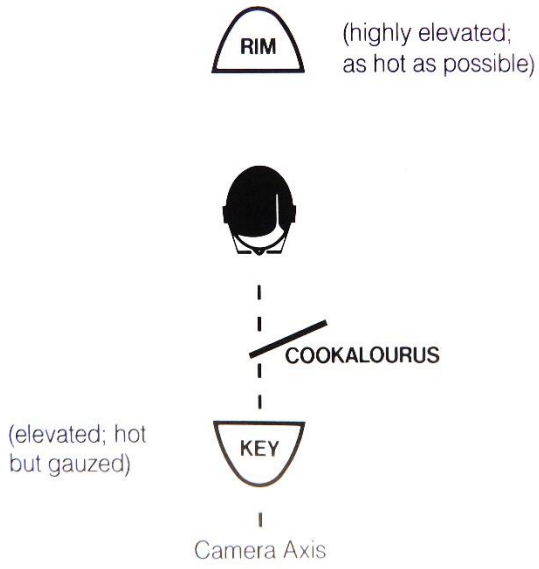
Studio laboratories in 1930 were accustomed to elevating the brightness of uniformly dim shots, or shots in which the faces of stars like Dietrich were shadowed, to improve their 'cinematic quality'. Sternberg, by putting something white in every shot, prohibited his laboratories from elevating the brightness, for the white object would burn-out if its

[5] Ibid., pages 218-240.

brightness were heightened, thus freeing himself to shoot scenes of uniform dimness or even to shadow Dietrich's face.[6]

Secondly, Sternberg eliminated the fill light when photographing Dietrich's face. Rather than using the three-light portrait configuration (see above), he elevated and centred a key light covered with gauze (to avoid casting distracting shadows), aimed it at her chin, shielded her forehead with a cookalourus ('cookie') and burned a powerful rim light onto the rear of her head from a high elevation.

Sternberg's Two-Light Portrait Technique



[6] For the same reason, a good number of careful cinematographers, when compelled later to shoot film for television, contrived to encompass within every shot not only something white and something black but somethings red, green, and blue as well in a risky but laudable attempt to defeat the automatic colour compensators employed indiscriminately by most broadcasting stations.

SHANGHAI EXPRESS, 1932 (director: Sternberg; cinematographer: Lee Garmes)

THE SCARLET EXPRESS, 1934 (director: Sternberg; cinematographer: Bert Glennon)

Make-up and costume test for THE DEVIL IS A WOMAN, 1935 (director: Sternberg; cinematographers: Sternberg and Lucian Ballard)

Sternberg's innovations permitted a deviation from customary practice of which he would make distinctive use. The elevated key light threw no shadows onto background sets, and there was no fill light to cast any shadows at all. Sternberg was free, therefore, to position Dietrich as close to a background as he wished while retaining the ability to light her independently (even darker on occasion than the objects surrounding her, for, as noted above, by placing a white object within every scene, he had eliminated the possibility of the studio laboratories heightening its overall brightness to lighten her face.)

BLOND VENUS, 1932 (director: Sternberg; cinematographer, Bert Glennon)

THE DEVIL IS A WOMAN, 1935 (director: Sternberg; cinematographers: Sternberg and Lucian Ballard)

Why does Dietrich's face command our attention even within scenes where she is surrounded by distracting clutter? Because her face is often half-a-stop brighter than any other potential competitor – a technique possible only when a face can be light independently of its background.

Seeing Things Differently

Sternberg's innovations in lighting were conceived by him as refinements to habits common to the craft of studio cinematography that he otherwise never abandoned. He continued, for example, to decorate areas of middle grey visible within scenes, as if they might otherwise prove distracting. Though aware and proud of his contributions, it never occurred to him that they, and their effect upon our seeing of Dietrich's face, exemplified how differently we attend to things when seen by means of movies from how we attend to them when seen by means of photographs

While attending to Dietrich's face by means of a photograph, for example, one will for a time register ancillary aspects of the photograph peripherally. Eventually, however, one's attention will be drawn to various of those other aspects as one weighs what one is seeing of her face against them and they against each another, the frame and its dimensions being an integral part of one's assessment. One has the time for minutes or months to compare and contrast all regions of the photograph with one another, registering whatever irregularities of appearance they may encompass, for one knows that nothing will change in one part of the photograph while you attend to another. Nothing will be missed by your doing so.

When attending to Dietrich's face by means of a movie, however, attempting to fathom through every subtle movement of part and whole what is occurring within her character's heart or mind at the moment, one has no time to compare and contrast her face with the colour of the shadow in the corner, the graininess of the rear wall or the compositional pattern of the other objects within the frame. To do so would be to disengage oneself from the story and its import, and hence, if the film is tightly constructed, one has no inclination to do so.[7]

Why, then, do the maxims of photographical lighting persist to this day, while those of studio cinematography have increasingly given way to documentary habits? Because lighting in cinematography serves an unphotographical purpose.

> Cinematographical lighting, unlike photographical lighting, seeks primarily to establish at any moment one and only one area on the screen to which a viewer's attention will be drawn.

If successful, no other areas on the screen will compete for attention. One may therefore do with them whatever one wishes – control them as in studio cinematography or forget them as in documentary shooting – for there will be no *perceivable* difference whichever one does, if one does it well.

As Sternberg was exemplifying unwittingly the difference between cinematographical and photographical lighting, the distinction was being confirmed simultaneously within every other aspect of cinematography as well (the positioning of the camera with respect to the objects to be seen within the shot, the arrangement and movement of objects with respect to one another as seen within the shot, the determining of the length, size and selection of shots to facilitate their being edited together later, the movement of the objects with respect to one another – to mention only the more obvious of them).

Every one of the above decisions required cinematographers to acknowledge that *composition* within a movie, unlike within a photograph or painting, derives from the arrangement in *time* of areas of attention occurring before and after one another rather than from their concurrent arrangement within a *frame*, for however limited the view of the objects seen within a shot, there was no visible frame to which audiences could be attending.

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[7] When pondering the *photographs* reproduced above from single frames of movies, therefore, keep in mind how differently one would attend to them as part of the passing show were one viewing the movies instead.

No wonder advertising stills for a movie have always been photographed by skilled photographers rather than reproduced from frames within it, for the frames of a movie when viewed in immobile isolation are almost always, as one would expect, photographically awful. To take a frame from a movie and print it as a still is to remove it from the compositional context that enabled it to be affective.[8]

Detail from a publicity photograph of Marlene Dietrich, dated 1935, made for Paramount Pictures.[9]

No wonder, as well and consequently, so few photographers of excellence have ever excelled as cinematographers, or conversely. The habits of perception and technique from within which photographers must work to capture events 'frozen in time' that will

[8] Note that the 3:2 width-to-height ratio of the photographs shown above differs from the 4:3 ratio of the frames of the movies from which they were taken. The persons and objects seen *within* the photographs are identical in size, shape and position to how they appear with respect to one another within the frames of the movies, but the 'boundary' of the area encompassing them differs in shape, for the only photographic unit available to me in the early 1970s to capture frames from movies insisted upon clipping the top and bottom of each of them to fit the remainder within the standard 3:2 format of 35mm slides.)

[9] The photograph, taken by William Walling, Jr., was inserted by the editors when publishing a version of this address as pages 19-24 within *Image* 26 (the Journal of Photography & Motion Pictures of the International Museum of Photography at George Eastman House, Rochester, New York), No. 1 (March 1983), as a further illustration, page 24, of "Sternberg's portrait lighting technique". [See the title page of this essay for information on its publication.]

thereafter reward repeated attention differ at root from those within which cinematographers must work when making movies worth reviewing.

By the end of the second world war, it had become obvious to at least some studio cinematographers that many habits of their craft, long deemed essential, were instead vestigial remnants of photographical happenstance. The demand for portable production equipment of high quality was thereafter unrelenting, and the appearance of compact recorders with which to capture on location synchronous sound on magnetic tape ensured that the goal of cinematographical lighting, even within the studios, would slowly but surely reshaped by the neo-realists in Italy, the New Wave in France, the Free Cinema movement in Britain, the cinema verité filmmakers in the United States and France and by the National Film Board of Canada.

Conclusion

Lest we forget, however, how fascinating were the diversities encompassed within the craft of cinematography during the 'golden age' of the studio era and how worthy of selective emulation they remain, let me draw your attention – with Dietrich's face in mind – to a practice as respectful as that of Sternberg of the distinction between cinematographical and photographical lighting, but with a contrary consequence.

John Ford, late in life, remarked to Peter Bogdanovich that the aim of cinematographical lighting when making movies with actors could be simply put.

> Light it so you can see their faces, and then let them act.[10]

Ford's maxim, as photographically nonsensical as it is cinematographically apt, had served him well as he directed a goodly number of the most highly esteemed movies ever made. Within them, however, no woman's face ever appeared with haunting resonance.

Sternberg directed fewer movies than Ford and far fewer of sustaining power. Within the core of them, however, he enabled the face of a woman to appear at crucial moments in the life of the character that she was portraying that, once seen, proved

[10] Ford as quoted by Peter Bogdanovich when being interviewed by Betty Jeffries Demby, "An Interview with Peter Bogdanovich", *Filmmakers Newsletter*, Volume 8, Number 8, June 1975, Page 28.

unforgettable. Dietrich's face remains for us, as it was for others nearly a century ago, among the most memorable ever encountered by way of movies or photographs.

I commend the contrast to you. Had Ford or Sternberg failed to do what they did as well as they did it, our cinematical world would be much impoverished. Despite what we know of what they did, however, and of its historical context, we know so little of how good movies have been lit that, as every filmmaker has had to learn the hard way long after the exemplary work of Ford and Sternberg, the question of 'how to do it better?' remains as open as every comparable query with respect to the designing of movies. However well-lit the past, pathways to a better future disclose themselves only dimly, step-by-cautious-step and after much hard work.