

Techniques for Showing Movement in Digital Photography

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Abstract:

Among the arsenal of creative styles of the photographer, we cannot overlook the multiple artistic effects that the movement of subjects in the image allows to appear, which appear as color brush strokes on canvas. Shots with long exposure times do not just capture a moment. Movements of things or people are blurred and seem to flow through time. Depending on whether we expose for a few seconds or several days, we can capture moving clouds, flowing water, or the wilting of a flower. For the human eye, this suddenly reveals connections that were hidden before. There are many techniques used to show movement in digital photos, some of which depend on the stability of the camera during exposure: such as star trails. and the other depend on moving the camera during exposure: such as panning. Implementing each of these techniques in an optimal manner requires good planning of the expected movement shape before shooting, as well as controlling many elements during filming. **The research problem** is how to adjust the composition, clarity, exposure and shutter speed, in addition to maintaining the sharpness of the details of the fixed parts in the composition and get rid of the noise resulting from long exposure times. Therefore, **the research aims to** find out how each of the showing movement techniques in the digital photo is implemented, to achieve accuracy in composition and control of clarity and exposure, while obtaining the desired effect from showing movement in the still image. The research follows the **analytical descriptive approach** by studying the techniques of showing movement in the digital photo, to determine the optimal way in which each of these techniques is implemented to obtain the desired effect of showing movement in the still image.

Keywords:

Digital Photography, Movement Blur, Long Exposure, Star Trails, Drawing with Light, Light Trails, Tossing the Camera.

INTRODUCTION:

Among the arsenal of creative styles of the photographer, we cannot overlook the multiple artistic effects that the movement of subjects in the image allows to appear, which appear as color brush strokes on canvas.

Shots with long exposure times do not just capture a moment. They show the subject in time. They visually shrink down the time of the shot to a single moment for us as viewers. Movements of things or people are blurred and seem to flow through time. Depending on whether we expose for a few seconds or several days, we can capture moving clouds, flowing water, or the wilting of a flower. For the human eye, this suddenly reveals connections that were hidden before.

The appearance of blur is usually enhanced when it is seen in contrast against sharply defined forms or shapes. By the same token, sharpness appears greater where it contrasts with blur, so it is worth arranging for some part of the scene to remain sharp .

Just as it is difficult to apply general rules to how fast a shutter speed will be needed to freeze a sprinter, it's equally difficult to predict the speed needed to suggest movement with a partial blur. That's the beauty of digital: we get to test these things before we shoot the image.

This sort of photography requires a tripod, especially when using a long lens. We are looking for a speed that is sufficient to freeze the static portion of the image, but slow enough to blur the motion. Camera movement will ruin this opportunity. A shutter speed that is too slow will cause the action to blur so much that the audience will not know what it is. it's all about finding the balance.

It may seem unnecessary to be bothered with focus since we are working with blur, but we will find that it is worth focusing as carefully as we would if we were aiming for a sharp image. By doing this we produce a solid "core" to the image, against which the viewer can more readily appreciate the blur. For similar reasons, it is just as important to maintain image quality as ever. Movement blur produces smooth or milky tones, so any breakup of the image either from resolution that is too low for the output size, or noise caused by high sensitivity (high ISO) settings can detract from the overall effect.

There are many techniques used to show movement in digital photos, some of which depend on the stability of the camera during exposure: such as star trails. and the other depend on moving the camera during exposure: such as panning. Implementing each of these techniques in an optimal manner requires good planning of the expected movement shape before shooting, as well as controlling many elements during filming. The research problem lies in how to adjust the composition, clarity, exposure and shutter speed, in addition to maintaining the sharpness of the details of the fixed parts in the composition and get rid of the noise resulting from long exposure times. Therefore, the research aims to find out how each of the showing movement techniques in the digital photo is implemented, to achieve accuracy in composition and control of clarity and exposure, while obtaining the desired effect from showing movement in the still image.

PROBLEM STATEMENT

Research problems can be limited to the following points:

- The problem of determining the appropriate shutter speed to show movement in proportion to the nature of moving subjects and their relative speed.
- The problem of setting the appropriate composition for the subject's motion path within the photo frame.
- The problem of adjusting focus when following moving subjects with panning technique.
- The problem of adjusting focus and composition when using extreme neutral density filters which cuts light sharply.
- The problem of maintaining the sharpness of details of fixed parts in the composition.
- The problem of achieving correct exposure when photographing with very long exposures at high light levels, such as sunlight.
- The problem of eliminating noise from long exposure photos.

AIMS AND OBJECTIVES

The research aims to find out how each of the showing movement techniques in the digital photo is implemented, to achieve accuracy in composition and control of clarity and exposure, while obtaining the desired effect from showing movement in the still image.

METHODOLOGIES

The research follows the analytical descriptive approach by studying the techniques of showing movement in the digital photo, to determine the optimal way in which each of these techniques is implemented to obtain the desired effect of showing movement in the still image.

CONCLUSIONS

- Movements of things or people are blurred and seem to flow through time. Depending on whether we expose for a few seconds or several days, we can capture moving clouds, flowing water, or the wilting of a flower. For the human eye, this suddenly reveals connections that were hidden before.
- The appearance of blur is usually enhanced when it is seen in contrast against sharply defined forms or shapes.
- A shutter speed that is too slow will cause the action to blur so much that the audience will not know what it is, it's all about finding the balance.
- When we are shooting for movement blur, we will find that brighter areas quickly become too bright when overlapped. At the same time, dark areas tend to be reduced by overlapping with lighter areas. The net result is a tendency to overexpose. We can exploit this to create high-key images or set exposure overrides to force tones to be darker, which helps to maintain intense colors.
- Motion looks different depending on its speed, direction, and distance from the camera. Objects that are moving faster produce more blur at a given shutter speed if the camera remains fixed. Subjects that cross the field of view appear to move faster than those heading right toward the camera. Things that are farther away seem to be moving more slowly than those in our immediate vicinity.
- To be able to shoot with long exposure times in daylight, we often need a bit of help. Even with low-speed film of ISO 25 or 50, and depending on the weather, we may only achieve exposure times of a second at the most, even with the aperture closed. This is often not enough to really make movement visible. ND (Neutral Density) can help. With these, we can reduce the light getting in through the lens as much as required to achieve the desired exposure time.
- Because an extreme ND filter is so opaque, we'll need to frame your shot and focus before it's fitted. To calculate the exposure, first meter without the filter in place. Note the shutter speed and then use the application such as ND-calculator to calculate the required exposure time.
- Sometime while the shutter is completely open, the flash is triggered. The operation of these curtains comes into play when flash sync is considered. Here are the primary sync modes used in most digital SLR cameras: **Front-curtain sync**. In this mode the

flash fires as soon as the front curtain opens completely. The shutter then remains open for the duration of the exposure, until the rear curtain closes. If the subject is moving and ambient light levels are high enough, the movement will cause a secondary “ghost” exposure that appears in front of the flash exposure. The second mode is **Rear-curtain sync**. In this mode the front curtain opens completely and remains open for the duration of the exposure. Then, the flash is fired and the rear curtain closes. If the subject is moving and ambient light levels are high enough, the movement will cause a secondary “ghost” exposure that appears behind the flash exposure (trailing it).

- Photographers can follow the moving subject with the camera in order to keep the subject within the frame. This technique called ‘panning’ allows the photographer to use a slower shutter speed than would otherwise have been required if the camera had been static. For successful panning the photographer must aim to track the subject before the shutter is released and follow through or continue to pan once the exposure has been made. The action should be one fluid movement without pausing to release the shutter.
- The Earth’s rotation causes stars in night photographs to appear as lines in as little as 15–20 seconds, depending on the camera format, focal length, and which direction the camera is pointed. In the northern hemisphere, all of the stars in the sky appear to revolve around Polaris, also known as the North Star. This is due to the fact that Polaris is the closest star to alignment with the northern polar axis of the Earth. As a result, pictures including the northern sky will show relatively short star trails circling the North Star. Photographs of the eastern sky will show star trails that resemble slightly curved forward slashes, and photographs of the western sky will have star trails that look like slightly curved back slashes. Photographs taken with the camera pointed due south will show long star trails that are relatively straight and parallel to the horizon.
- A star-trail image can be created with a single long exposure or with many exposures layered, or stacked, to give a similar effect. In the stacked image method, instead of a single shot, we capture several or even dozens in sequence, with 2 seconds between shots. Each image portrays each star as a small arc of light. The stack of images, once merged, connects the arcs to create the curving sweep of the stars’ paths. In essence, a star trail is a movie composed of many individual frames compressed into a single image.

References

1. Ang, Tom. 2013. *Digital Photography Masterclass: Advanced Photographic Techniques for Creating Perfect Pictures*. Second Edition. DK Publishing.
2. —. 2018. *Digital Photography: An Introduction*. Fifth Edition. DK Publishing.
3. Batdorff, John. 2015. *Travel and Street Photography: From Snapshots to Great Shots*. Peachpit Press.
4. Black, Brain. 2017. *DSLR Photography for Beginners*. Kindle Edition.
5. Bucher, Chris. 2007. *Lighting Photo Workshop*. Wiley Publishing Inc.
6. Busch, David D. 2009. *David Busch's Quick Snap Guide to Lighting*. Course Technology PTR.

7. —. 2005. *Mastering Digital SLR Photography*. Thomson Course Technology PTR.
8. Gabriel, Biderman. 2014. *Night Photography: From Snapshots to Great Shots*. Peachpit Press.
9. Galer, Mark. 2006. *Digital Photography in Available Light: Essential Skills*. Third Edition. Elsevier Ltd.
10. Hirsch, Robert. 2008. *Light and Lens: Photography in The Digital Age*. Elsevier Inc.
11. Keimig, Lance. 2010. *Night Photography: Finding your way in the dark*. Elsevier Inc.
12. Kinghorn, Jay, and Jay Dickman. 2009. *Perfect Digital Photography*. Second Edition. McGraw-Hill Companies.
13. Legault, Thierry. 2014. *Astrophotography*. Rocky Nook, Inc.
14. Long, Ben. 2015. *Complete Digital Photography*. Eighth Edition. Cengage Learning PTR.
15. Marquardt, Chris, and Monika Andrae. 2016. *The Film Photography Handbook: Rediscovering Photography in 35mm, Medium, and Large Format*. 1st Edition. Rocky Nook.
16. Peterson, Bryan. 2017. *Understanding Color in Photography: Using Color, Composition, and Exposure to Create Vivid Photos*. Watson-Guptill.
17. Stoppee, Brian, and Janet Stoppee. 2009. *Stoppees' Guide to Photography and Light: What Digital Photographers, Illustrators, and Creative Professional Must Know*. Elsevier Inc.
18. Taylor, David. 2014. *Mastering Landscape Photography*. Ammonite Press.
19. Wu, Jennifer, and James Martin. 2014. *Photography Night Sky: A Field Guide for Shooting after Dark*. Mountaineers Book.
20. <https://hoyafilter.com/product/prond2/#description>(accessed April 4, 2020).
21. https://play.google.com/store/apps/details?id=com.iioannou.ndcalculator&hl=en_US(accessed April 4, 2020).