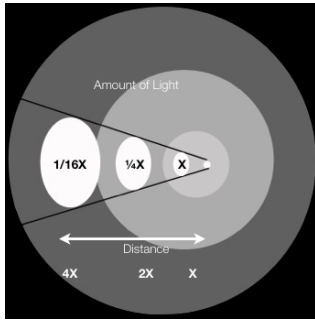


### Key Learnings #5 – Flash Photography



#### The Inverse-Square Law

*The quantity of light is InverselyProportional to the distance from the light source.*

*This is also known as Light-Falloff.*

- The truth is ... if you understand light ... flash can be a wonderful thing!
- Actually, a flash unit's operation is very simple!
- Think of it as a lightbulb with a fixed output ...
- Therefore, the only way to control exposure, is by controlling the amount of time the flash bulb is on.
- This is called ... Flash Duration.

- If Flash Duration = 1/1000 second, then 1/2000 second provides HALF as much light, 1/4000 second provides 1/4 the light, etc.
- The speedlight automatically controls flash output ... by reading the amount of light (via something called "Monitor Pre-flash" ... and adjusting the Flash Duration to match the ISO and f-stop setting.
- The camera's shutter speed IS NOT a significant factor in flash exposure ... because the Flash Duration is so much shorter than the Shutter Duration.
- Shutter speed DOES affect the Ambient Light Source ... the longer the shutter stays open ... the brighter the areas *not* lit by the flash *will be*. The shorter the shutter speed, the darker the ambient light exposure.

#### Considering the Speedlight

- Ambient light isn't always good light!
- Speedlights are powerful [**Guide Number (GN)** = distance X aperture (f-number)]
- Built-in flash is very much inferior and less flexible than the external speedlights
- Speedlights are consistent, daylight-balanced light sources
- Speedlights freeze subject motion
- Speedlights reduce your reliance on high ISOs for low-light photography
- Brand speedlights (Canon, Nikon, etc) are fully integrated with their related cameras

#### Light Modification and Light Modifiers

- Direct on-camera flash is very harsh and produces shadows, **Bounce Flash** is softer
- Some speedlights incorporate a **Bounce Card** to produce a **Catch Light** in the eye
- Bouncing flash off ceiling or wall; think of **Angle of Reflection = Angle of Incidence**
- **Light Modifiers** are third-party add-ons that help improve the light from flash. They can be for **diffusing light** or for **bouncing light**.
- The **Stoffen Light Modifier** ([www.stofen.com](http://www.stofen.com))
- Lumiquest makes a number of light modifier products ([www.Lumiquest.com](http://www.Lumiquest.com))

#### Other Considerations:

- **Off-Camera Flash** gives better definition to your subject. Use **wireless flash, sync cords, or third-party radios** ([www.PocketWizard.com](http://www.PocketWizard.com)). Consider using **Stroboframe Flash Brackets** ([www.Tiffen.com](http://www.Tiffen.com). then click on the Stroboframe link)
- **Fill Flash** is successfully used outdoors to fill in details in shadow areas. You can force your flash to always shoot, and you can vary the flash duration for just a touch!
- **Slow-Sync Flash** is used in dark areas to light the subject (with the flash) and the surrounding area by the ambient light. When the shutter opens, the flash fires for a short duration to light the subject, but the shutter continues to stay open to build up the lower-level ambient light. Great for weddings, parties, outdoor night portraits, etc.

## NOTES

### Red-Eye Reduction

- *Change flash angle to the eye.*
- *Use off-camera flash*
- *Avoid using Red-Eye Reduction flash mode!*
- *Using flash with a telephoto lens raises chance of red-eye!*