
Professional portrait studio for amateur digital photography

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Introduction

- Digital cameras have become popular consumer items
- The best-sellers are point & shoot models
- Point & shoot cameras must have minimalist user interfaces

- Digital cameras are ideal for home page applications
- World Wide Web photography: instant & global
- Digital photos can easily be manipulated, e.g., a background inserted: personalized greeting card

- Business opportunity: low-cost professional portrait studio based on digital camera

Light source problems

- Designed for delivering acceptable images in typical outdoors or small room applications
- Fixed capturing device optimized for single illuminant
- Aggressive white balancing due to low dynamic range

- Digital cameras often fail with tungsten filament lamps
- Built-in flash is too weak to fill a studio
- Point & shoot cameras do not have flash connectors
- Sophisticated camera firmware is confused if the built-in flash is used to trigger an external flash
- For a portable studio, the lighting set-up must be very flexible

Backdrop problems

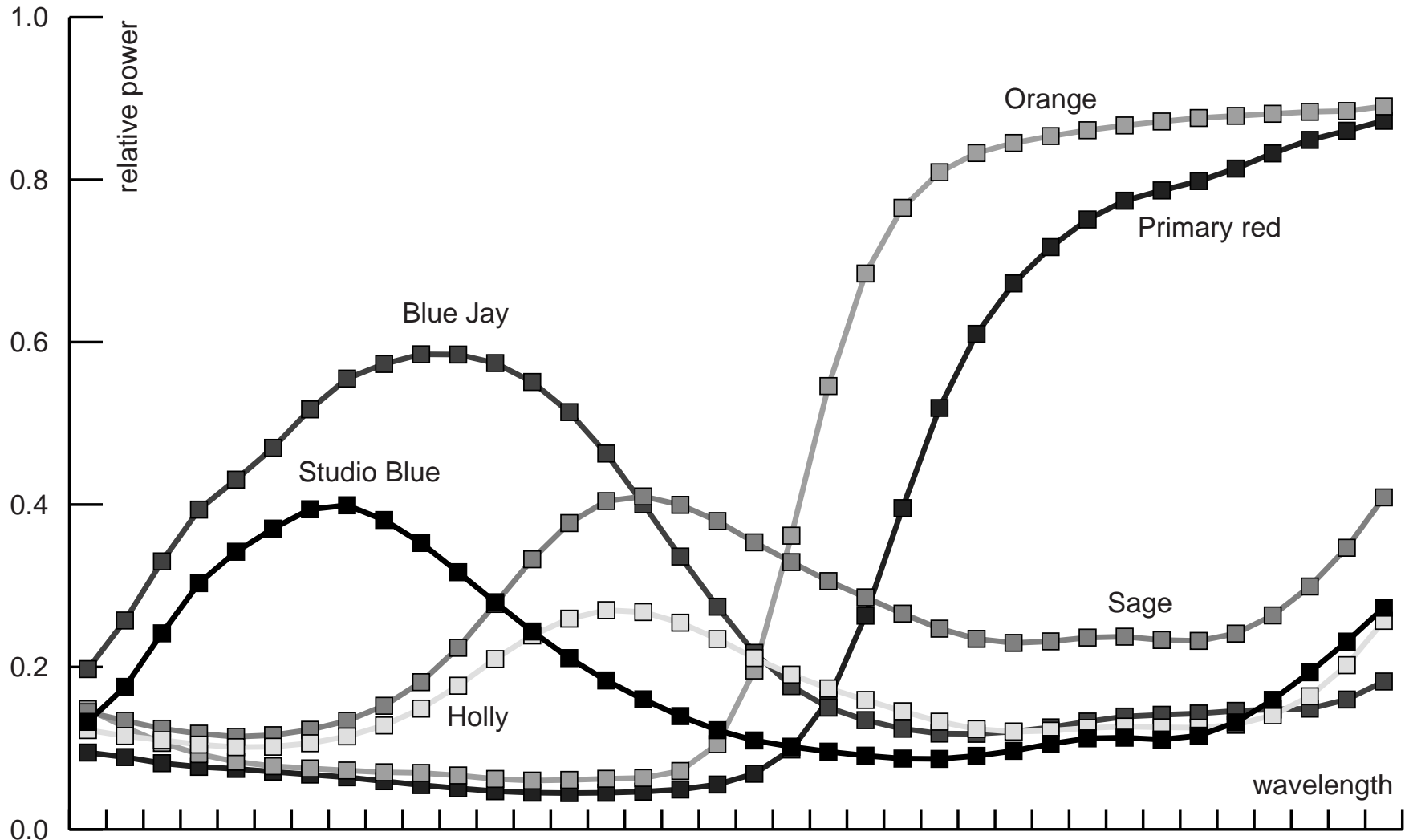
For chroma-key techniques, it must be possible to automatically detect the entire background

- The background's color coordinates must be different than any color on the subject
- The background color must be very uniform, so that a narrow search can be applied
 - camera lens vignetting
 - large-angle uniform lamps are required
 - walls and ceiling influence lighting
- Background shall not cause failure in the camera's white balancing mechanism

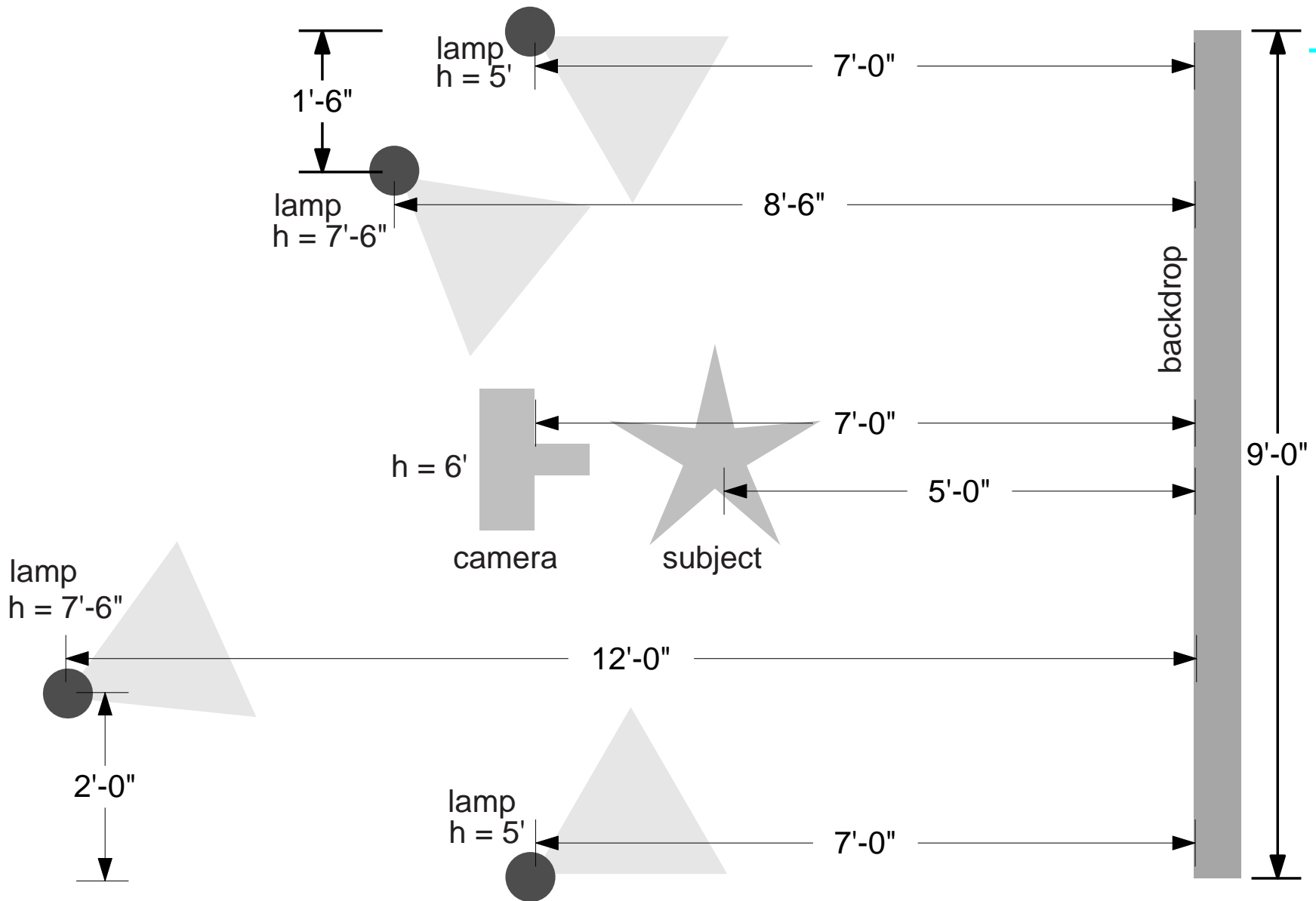
TV broadcasting lamps

- Designed for cramped spaces
- Simulate D₅₂ illuminant with CRI 98
- Fluorescent lamps warm up quickly (20 minutes) and have long life (15,000 hours)
- Peak luminous intensity of 8,000 cd allows for short exposure times
- Large angle (55° vertical, 60° horizontal) yield uniform illumination
- Ballast operating at 1 kHz safe for all current sensors

Relative spectral power distribution of some background papers



Portrait studio for a small room

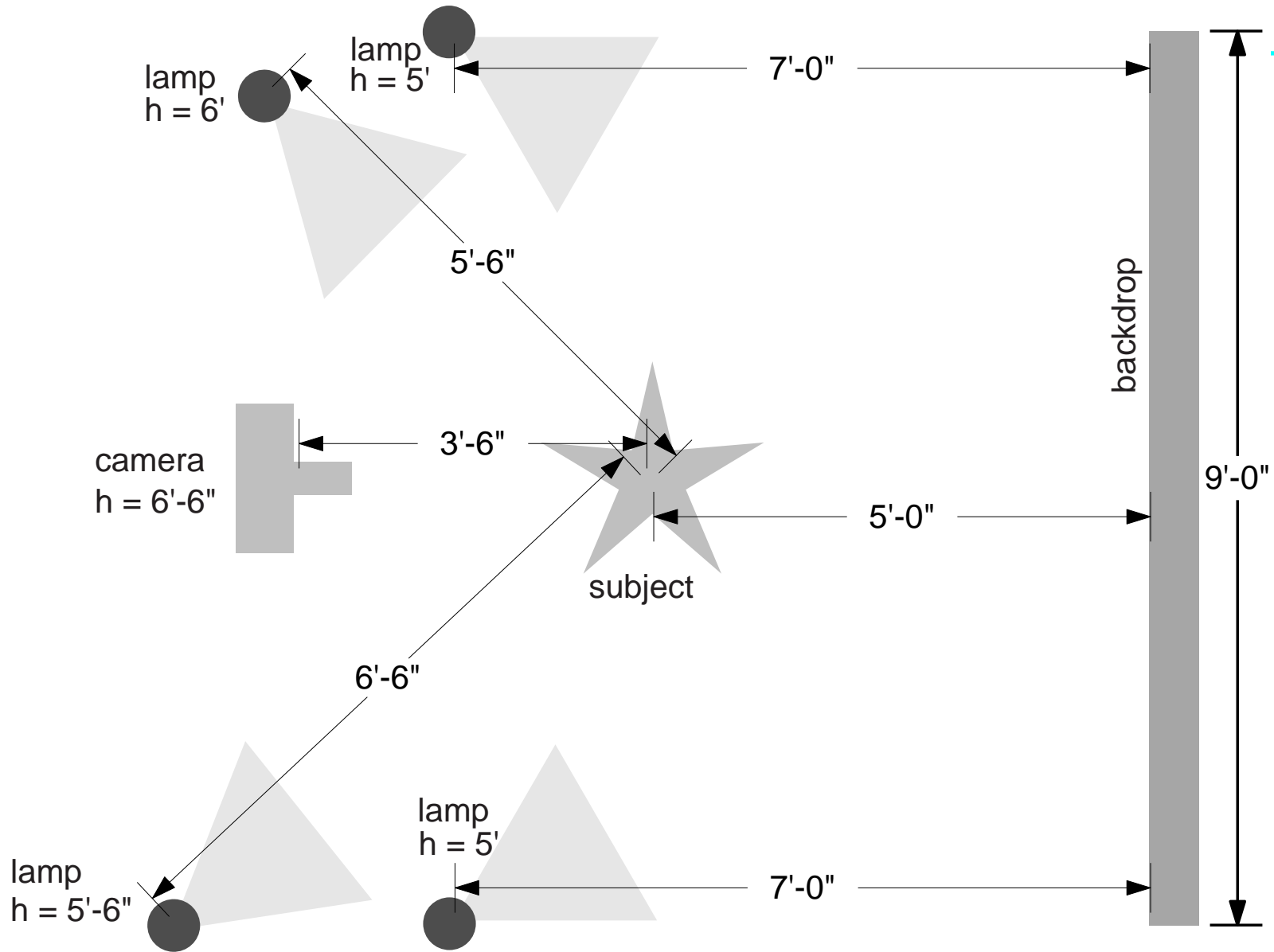


Portrait studio in the small room

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Portrait studio for a large room



Portrait studio in the large room

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Automatic background replacement

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