




Practical LED Applications and Transformational Lighting

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BENYA LIGHTING DESIGN



STRATEGIES IN LIGHT: NICHE TO MAINSTREAM



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The North American Lighting Markets

Residential

- Commodity – architectural
- Commodity - traditional
- Decorative
- Specialty and Niche

Commercial

- Commodity – white goods + industrial
- Commodity – architectural
- Performance
- Decorative
- Niche



From Adversity Cometh Opportunity

**A New Record the Lighting Industry Could Do
Without: Fourth-Quarter 2008 Lighting
Systems Index Reaches Ten-Year Low**

National Lighting Bureau, February 18, 2009




Key Drivers for Change

- USGBC/LEED
- Architecture 2030
- ASHRAE/IES/USGBC 189.1
- California AB 1109 (25% reduction to indoor lighting energy by 2018/50% residential)
- California AB 32 (1997 Greenhouse gas rate by 2020)



Sustainability Impacts to the Market

1. More daylight *integration*
 2. Less *general* lighting
 3. More *purposeful* lighting
 4. Less *ornamental* lighting
 5. More *system* efficacy
 6. Less *gratuitous* lighting
 7. More energy codes and *regulations*
 8. Less wiggle room for *playful* lighting
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Transforming Lighting

Reasons to re-invent lighting as we know it

1. Lighting is based on the bulb and tube.
2. Light bulbs fail and must be replaced
3. Lighting prefers to be room temperature
4. Lighting prefers voltage to current
5. Light sources are big
6. Light bulbs are hot
7. Lighting controls are either crude or \$\$\$

Niche vs. Mainstream

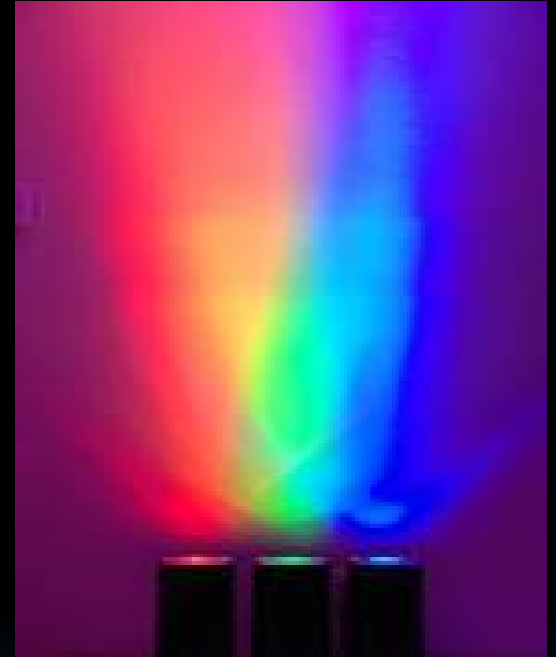
Niche product

- Excels at either or both
 - Appearance
 - Performance
- Cost is a consideration
- Small quantities, high price

Mainstream product


- Good value at either or both
 - Appearance
 - Performance
- Cost is a deciding factor
- Large quantities, reasonable price

Niche



Mainstream





Transformational lighting moves new technology
into the Mainstream

**OUT OF THE CAN AND OFF
THE TRACK**

Non transformational



Transformational Niche



Transformational: Big Niche




Transformational: the Downlight



In the can

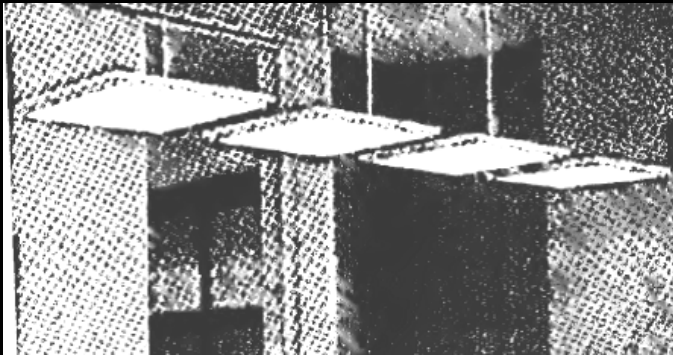


Out of the can



How SSL's Advantages Affect the Art of Luminaire Design

Planar Luminaires



Ring Luminaires



Task Luminaires



Portable Luminaires



Outdoor Luminaires




Amazing Designs



Superior Effects





How SSL's Advantages Affect Lighting **System** Design

Architectural/Sign Backlighting



Architectural Outlines and Coves



Neon effects



+




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The Best Opportunities for SSL

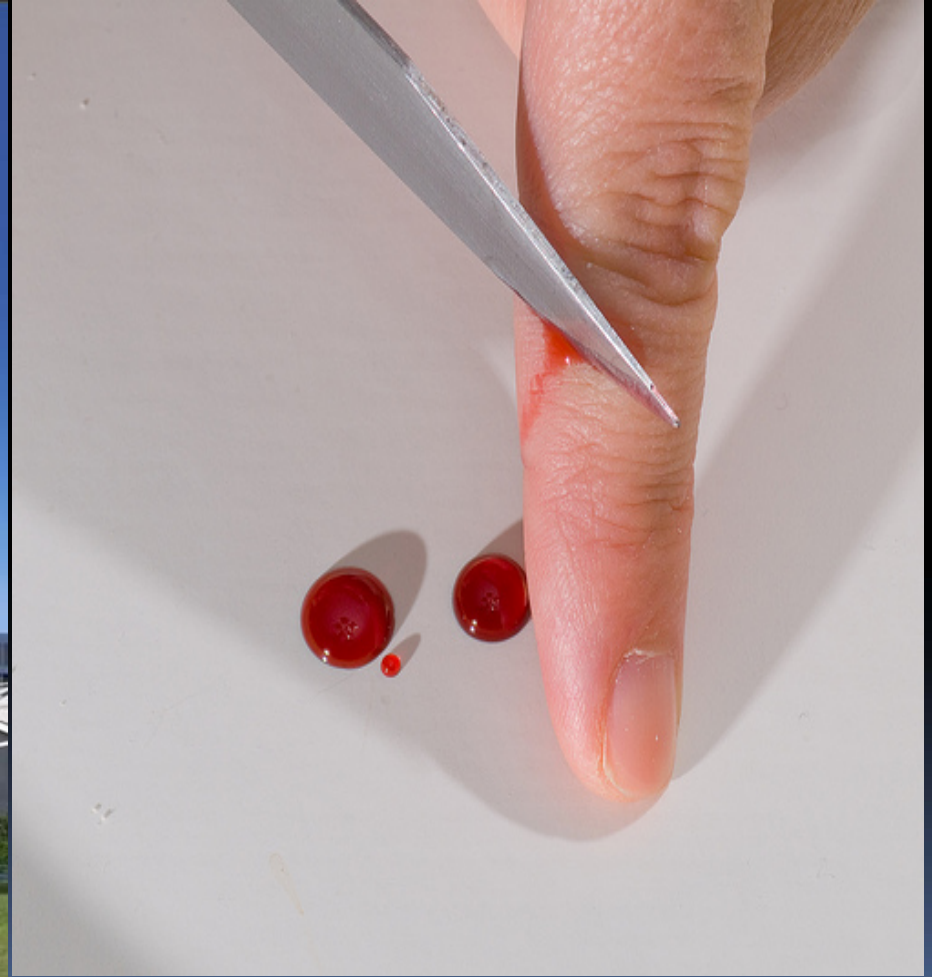
- Smaller luminaires
 - No reflector needed
 - Small discrete luminaires
 - Not hot to touch
 - Optical control with individual aiming
 - Low voltage and low power
 - Easy to control and dim
 - Shape flexibility
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The Worst Opportunities for SSL

- Big lumen packages
- Big fixtures
- Large area lighting
- Long throws
- Distant mounting
- Exposed high brightness lamps


Designer's Challenge



Are you on the leading edge or the bleeding edge?



Competing Sources

- Induction fluorescent
 - Induction plasma metal halide
 - OLED's
 - High efficacy incandescent
- 



Completely Changing the Lighting and Electrical Industry in the next decade

Posted at www.benyalighting.com

NICHE TO MAINSTREAM