

**building  
performance  
congress**

Messe  
Frankfurt

from Renaissance to Rodin....

....from lighting design to shadow design

Author: © James Wallace MIES, ELDA,  
Date: April 2006  
Occasion: Light Focus, 2006, Building Performance Congress  
Light + Building Fair, Frankfurt, Germany

26/04/2006

Light PLAN

1

The notes commence on the next page.

building  
performance  
congress

from Renaissance to Rodin...  
...from lighting design to shadow design

Messe  
Frankfurt

# Shadow

**Projecting Shadow**  
– when shadow  
mimics the original


Light PLAN

## Preface

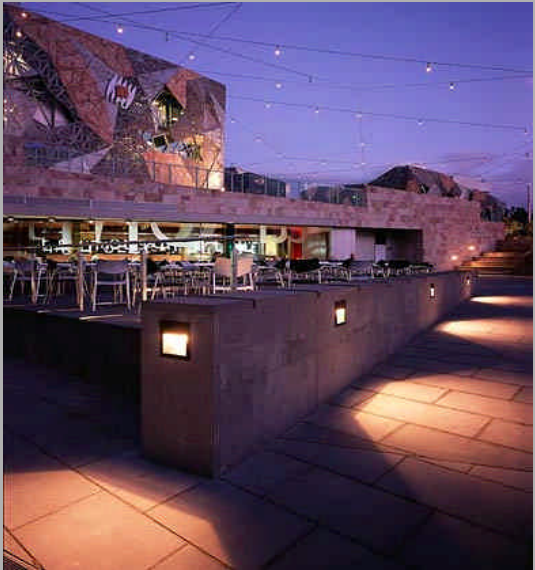
Any ability to predict and design shadow into my architectural lighting designs has developed more so as a result of observation and experience, rather than being the result of the formal learning program I attended in my earlier years, or from any mentor's skill that has been passed down to me.

**building  
performance  
congress**

from Renaissance to Rodin....  
....from lighting design to shadow design




## Shadow



Federation Square, Melbourne, Australia

dark intervals  
between  
brightnesses

26/04/2006



3

Today, LD's are being encouraged to understand and work with shadow in a more professional manner.

In recent years, I have noticed a number of articles on the subject of shadow and shadow design appearing in architectural lighting design journals.

Although having the positive affect of increasing my awareness and intrigue in shadow design, the understanding of it, and how to work with it, still remains somewhat of a mystery to me.

**building  
performance**  
congress


from Renaissance to Rodin....  
....from lighting design to shadow design

Messe  
Frankfurt

## Shadow



**Silhouetting** – when  
shadow overloads  
our vision system



Light PLAN

26/04/2006

4

There appears to be little guidance or practical information to turn to on this subject.

If it really exists, how do we know when to use this “shadow design” rather than lighting design, and will it be appropriate?

Are there certain types of installations, or types of base materials that lend themselves to one or the other lighting technique?

**building  
performance  
congress**

from Renaissance to Rodin....  
....from lighting design to shadow design

Messe  
Frankfurt

## Shadow Design ?

26/04/2006

Light PLAN

5

In October last year, after an assignment in Sweden, I was able to stay a few weeks longer in Europe.

During this time, the elusive subject of “shadow design” raised its head once again, while I was enjoying the relaxing experience of observing Italian and French art.

(please understand that from an Australian perspective, this is considered to be a very special occasion)

**building  
performance**  
congress

from Renaissance to Rodin....

....from lighting design to shadow design

26/04/2006

Messe Frankfurt

Light PLAN

6

Although my quest for a better understanding of shadow design continues, I did take inspiration from some of the great artists in history.

It is their sculptural techniques of dealing with both light and shadow that have inspired the idea for this paper.

## building performance congress

from Renaissance to Rodin....  
....from lighting design to shadow design



**Battle of the Centaurs** by  
Michelangelo Buonarroti, Casa  
Buonarroti, Florence (marble  
relief)



**The Gates of Hell** by  
August Rodin,  
Musée Rodin, Paris  
(detail)

26/04/2006



7

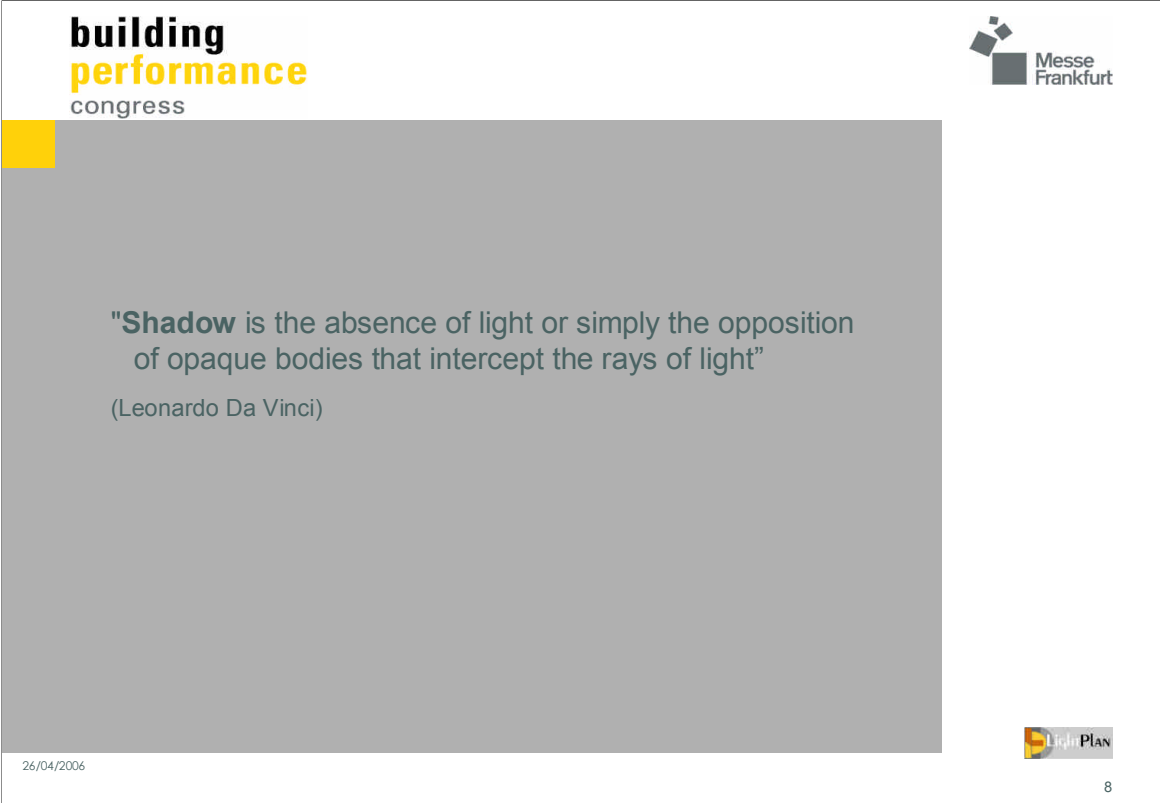
### Introduction - Renaissance to Rodin

A major hallmark of the 15th century renaissance artistic era was not just the observation and understanding of the play of light, but the acquired skills of both interpreting light patterns on canvas, and harnessing the reflective properties of light on sculpture.

When I examined the Italian renaissance style more closely, particularly in sculpture, I noticed the artists' regular use of light in conjunction with convex body shapes, such as muscles, raised sinews, and protruding bones. This style, along with the diffusing properties of the white marble base material, encourages light to reflect off the smooth convex surfaces, thus emphasising form.

Almost 400 years later, the 19th century artist August Rodin became a great admirer of the renaissance artist Michelangelo Buonarroti. However, Rodin chose to interpret form by working in a completely different way than any predecessor. He preferred to finish his sculptures in bronze, being a dark, semi-specular material, and emphasised shadow rather than light.

This presentation is concerned with shadow design in the context of the illumination of opaque objects only. It draws from my observations, and attempts to create a springboard for further discussion, with a view towards LD's in the future having a framework of design parameters to harness, when faced with the choice of creating a lighting design, or a shadow design.



**building  
performance**  
congress

Messe  
Frankfurt

"**Shadow** is the absence of light or simply the opposition  
of opaque bodies that intercept the rays of light"

(Leonardo Da Vinci)

26/04/2006

Light PLAN

8

During the height of the Italian renaissance, Leonardo Da Vinci explained that, "Shadow is the absence of light or simply the opposition of opaque bodies that intercept the rays of light"

Leaving the dictionary aside, for now, I hope we can agree on this definition of "shadow" from a renaissance master.

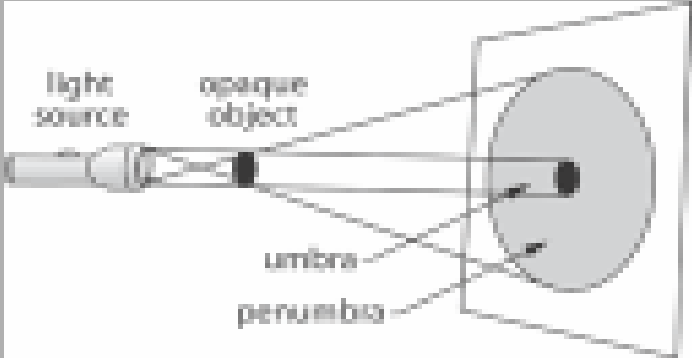
And, it certainly suits the context of the remainder of this presentation.



**building  
performance  
congress**

from Renaissance to Rodin....  
....from lighting design to shadow design

Messe  
Frankfurt



The diagram shows a light source on the left emitting rays that pass through an opaque object. The rays create two distinct shadow regions on a surface to the right: a dark central area labeled 'umbra' and a lighter, greyish outer area labeled 'penumbra'.

The Two  
Components of  
Shadow

26/04/2006

Light PLAN

9

### The Two Components of Shadow

LD's understand that while shadow can be said to be "complete darkness", in the majority of cases it is not.

It is more often relative brightnesses that are significantly lower than the adjacent illuminated subject or area.

In fact, shadow is often perceived as two distinct, adjoining components:-

- the **umbra**, or the central, totally dark part of the shadow; and
- the **penumbra**, or the partially darkened, or grey outer area.

The **umbra** and **penumbra** exist together when the light source (projected area) is smaller than the object and at a suitable distance.

Only a **penumbra**, (an incomplete or partial shadow) is formed on the occasion when the light source (projected area) is larger than the object.

Comment:-

For instance, if we substitute the items in the diagram with a large diameter projector floodlight and an apple, only a penumbra can be expected.

The slide features a large grey rectangular area in the center. To the left of this area is a yellow square. The text 'building performance congress' is in the top left, with 'building' in black, 'performance' in yellow, and 'congress' in black. To the right of the grey area, the text 'from Renaissance to Rodin....' and '....from lighting design to shadow design' is displayed. In the top right corner, the 'Messe Frankfurt' logo is visible. On the right side, the text 'Italian renaissance commenced in 1401' is present. The bottom left corner shows the date '26/04/2006' and the bottom right corner shows the 'Light PLAN' logo and the number '10'.

**building  
performance  
congress**

from Renaissance to Rodin....  
....from lighting design to shadow design

Messe  
Frankfurt

Italian renaissance  
commenced in 1401

**The Renaissance and  
Lighting Design**

26/04/2006

Light PLAN

10

### **The Renaissance and Lighting Design in Art**

According to the Florentines, the Italian renaissance era is said to have commenced in 1401.

It followed the Gothic era, and preceded the Baroque era.



## Gothic Era

**“Adoration of the Magi”** (1255-60) by **Niccola Pisano** (c. 1220-1278) Pulpit, Baptistery of San Giovanni, Pisa.

26/04/2006



11

## Gothic Era

Artistic eras generally don't start or finish abruptly on a certain date, and for reasons of context, two example of Gothic art are discussed first.

**“Adoration of the Magi”** (1255-60) by **Niccola Pisano** (c. 1220-1278)  
Pulpit, Baptistery of San Giovanni, Pisa.

Niccola Pisano is sometimes considered to be the founder of modern sculpture. He was an Italian whose work is noted for its classical Roman sculptural style.

Note here how his use of the play between daylight and shadow interprets the smooth flow of the robes.

Comment:-

It is the year 1260.

At this point in history, we can appreciate that the art of sculptural realism was already developing.



## Gothic Era

**“Madonna In Glory”**  
(1305-10) by **Giotto di Bondone** (1267-1337).

26/04/2006



12

**“Madonna In Glory”(1305-10) by Giotto di Bondone (1267-1337).**

Better known as just “Giotto”, he was an Italian painter and architect and is generally considered the first in a line of great artists who contributed to, and developed the Italian Renaissance.

In painting, it appears the technique of realistic facial expression via the use of light and shade has not yet developed.



## Renaissance Era

**“Madonna and Child Blessing”**  
(c.1455) by **Jacopo Bellini** (c.1400-1470), Gallerie dell'Accademia, Venice.

26/04/2006



13

## Renaissance Era

**“Madonna and Child Blessing”** (c.1455) by **Jacopo Bellini** (c.1400-1470), Gallerie dell'Accademia, Venice.


Jacopo Bellini was one of the founders of the Renaissance style of painting in Venice and northern Italy.


In the early renaissance era colours and skin tones appear well developed, but realistic facial expression is still not yet developed, although this may be a stylistic feature of the times, rather than a lack of skill on the part of the artist.

It is the year 1455.


**building  
performance  
congress**

from Renaissance to Rodin....  
....from lighting design to shadow design






Detail →



Renaissance Era

**“The Birth of Venus” by Sandro Botticelli.** Uffizi Gallery, Florence.

26/04/2006



14

**“The Birth of Venus”** by [Sandro Botticelli](#). [Uffizi](#) Gallery, [Florence](#).

(top left)

The painting depicts [the Goddess Venus](#) emerging from the [sea](#) as a fully grown woman, as described in [Greek mythology](#).

Interestingly, in painting, the part of a picture where the shade imperceptibly blends with the light is known as the **penumbra**.

Detail (right)

Here, Botticelli applies a distinct **penumbra** to the face of Venus and to the characters on the left, indicating an acknowledgment of the directional qualities of daylight.



Renaissance  
Era

“La Primavera” (c. 1482) by Sandro Botticelli. Uffizi Gallery, Florence.

Detail →



← Detail



26/04/2006

15

“La Primavera” (c. 1482) by [Sandro Botticelli](#). [Uffizi](#) Gallery, [Florence](#).  
[Venus](#) is standing in the centre of the picture, set slightly back from the other figures. Above her, [Cupid](#) is aiming one of his arrows of love at the Three Graces, who are elegantly dancing a springtime [rondel](#).

In the details, note the dynamic use of **penumbra** and subtle colour flushes on faces.

Botticelli’s ability to play the light on and through garments to reinforce translucency is now well advanced.

It is now the year 1482.





## Renaissance Era

**"The Battle of the Centaurs"** (c. 1492)  
by **Michelangelo Buonarroti**. Casa  
Buonarroti, Florence.

26/04/2006



16

**The Battle of the Centaurs (c. 1492) by [Michelangelo Buonarroti](#). [Casa Buonarroti](#), [Florence](#).**

This a relief carved in white marble.

The major muscle groups of individuals are beautifully modelled in reflected daylight, enabled through the use of white Carrara marble. (from Tuscany)

Here, shadow is used to great effect to enhance the relationship of individual figures to one-another.





## Renaissance Era

“Pietà” (1499) by  
**Michelangelo**, St.  
Peter's Basilica,  
Rome



26/04/2006

17


“Pietà” (1499) by [Michelangelo Buonarroti](#). St. Peter's Basilica, Rome.

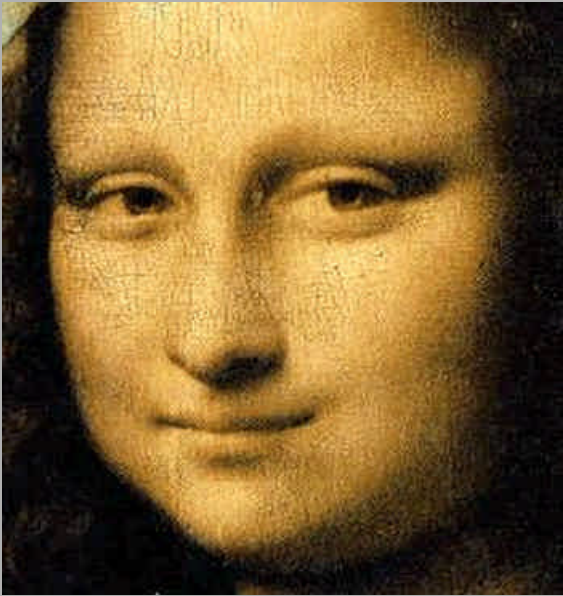
Carved from Carrara marble when the sculptor was 24 years old.

The bodily sculptural detail is growing richer. Tendons, sinews, and smaller bones become light-reflective.

**building  
performance**  
congress

from Renaissance to Rodin....  
....from lighting design to shadow design






Renaissance Era

**“The Mona Lisa” (La Gioconda)**  
(c. 1503–1507) by **Leonardo da Vinci**.  
Musée du Louvre, Paris.

26/04/2006



18

**“The Mona Lisa” (La Gioconda)** (c. 1503–1507) by [Leonardo da Vinci](#).  
[Musée du Louvre](#), [Paris](#).


It is now the early 16th century, and we see the full development of shadow technique in terms of the reinforcement of facial realism in painting.


Note the use of **umbra** (dark shadow) around the eyes, under the nose, and enveloping the periphery of the face.

The added subtly of **penumbra** (half shadow) completes the picture.

**building  
performance**  
congress

from Renaissance to Rodin....  
....from lighting design to shadow design






**Renaissance Era**

**“David”** (c. 1501-1504) by **Michelangelo Buonarroti**. Gallerie dell'Accademia, Florence.

26/04/2006



19

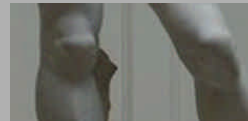
**“David”** (c. [1501-1504](#)) by [Michelangelo Buonarroti](#). Gallerie dell'Accademia, Florence.

At the same time in history that Leonardo da Vinci finished painting the Mona Lisa, Michelangelo completed the sculpture of David, also considered to be a masterpiece of [renaissance](#) art.

This particular interior siting of David manages to entice the observer to stay longer to consider its magnificent form. The aware LD will also linger to consider the perfect play of light, both reflected and absorbed, across the diffuse white monolith of Carrara marble.

The contemporary purpose-made display lighting emanates from a circular skylight dome immediately above the sculpture, while supplemented with an outer concentric ring of projector style spotlights.

This lighting technique mirrors the natural blend of sunlight (directional) and daylight (diffuse) we might expect outside.



## Renaissance Era

“David” (c. 1501-1504) by **Michelangelo Buonarroti**. Gallerie dell'Accademia, Florence.

26/04/2006



20

Note the dominance of reflected light in conjunction with major muscles, raised sinews, and protruding bones in hands, knees and feet.

These are smooth convex body shapes.

It seems the reflected light is at its peak when offered the chance to “escape” from the highpoint of a particular curved body element.

Except for David’s hair, and an area between his thighs, there is little opportunity for deep shadows to form to the extent of an **umbra**, due to the lack of deep crevices.

Therefore, a skilful combination of **penumbra** and highlights together dominate the whole sculpture.



### Lighting Design Elements

1. an opaque, diffuse, light-coloured base material
2. a dominance of smooth convex shapes
3. a directional-diffuse (natural) lighting technique

26/04/2006



21


It appears to me that Michelangelo has brought together a combination of key design elements here so as to interpret the form of his David in light.


These design elements could be listed as:-

1. an opaque, diffuse, light-coloured base material
2. a dominance of smooth convex shapes
3. a directional-diffuse (natural) lighting technique


**building  
performance**  
congress

from Renaissance to Rodin....  
....from lighting design to shadow design





Detail →



Renaissance Era

“Virgin on the Rock” (c. 1508) by Leonardo Da Vinci. National Gallery, London.

Chiaroscuro

26/04/2006

22

**“Virgin on the Rock”** (c. 1508) by **Leonardo Da Vinci**. National Gallery, London.

The Italian renaissance era also produced the development of the **chiaroscuro** technique, as seen here.

Briefly, **chiaroscuro** is the effect of light modelling where three-dimensional volume is suggested by highlights and shadow.

Applied subtly in the renaissance, it fully developed during the Baroque era.  
(refer to the detail)

We will stay with this subject as we look at the next painting.



## Baroque Era

**“The Calling of Saint Matthew”**  
(1599-1600) by  
**Michelangelo Merisi da Caravaggio**  
(1571–1610).  
Contarelli Chapel,  
San Luigi dei Francesi, Rome.

## Tenebrism



26/04/2006

23

## Baroque Era

I will close this section with two examples of Baroque paintings which indicate a further advancement in the ability to depict light and shadow.

From chiaroscuro, through the Baroque era, a much more dramatic form of light and shadow technique emerges.

**“The Calling of Saint Matthew”** (1599-1600) by **Michelangelo Merisi da Caravaggio** ([1571–1610](#)). [Contarelli Chapel](#), [San Luigi dei Francesi](#), [Rome](#).

It is the year 1600, and Caravaggio creates distinct straight lines to separate the extents of the beam of daylight from the dark areas beyond.


This is an extreme form of chiaroscuro called **tenebrism**, where the background is said to be “murky” and subjects are highlighted in dramatic illumination.


LD’s often describe their high contrast lighting designs as **chiaroscuro**, however most of these designs would fall into the realm of **tenebrism**.



**building  
performance**  
congress

from Renaissance to Rodin....  
....from lighting design to shadow design






Baroque Era

**“Sacred Love Versus Profane Love” (1602-1603) by Giovanni Baglione (1566–1643).**  
Gemäldegalerie, Staatliche Museum, Berlin.

Tenebrism

26/04/2006



24

**“Sacred Love Versus Profane Love” (1602–1603) by [Giovanni Baglione \(1566–1643\)](#). [Gemäldegalerie](#), Staatliche Museum, [Berlin](#).**

This painting completes this series of examples of Lighting Design in Art.

Here, Baglione fully utilises the lighting effect of **tenebrism** to further dramatise the scene.

The classic black background (umbra);

vivid contrasts of light and shadow on the two main characters (The Angel and Cupid) bathed in a white directional light beam;


the supporting cast (The Devil) relegated to half-light.....

These all bare the hallmarks of elements within a stage lighting design.




**building  
performance**  
congress

from Renaissance to Rodin....  
....from lighting design to shadow design



- "Shadow is the absence of light or simply the opposition of opaque bodies that intercept the rays of light.
- Shadow is of the nature of darkness;
- Light is of the nature of splendour.
- They are always combined on the body, and shadow is more powerful than light, for it can completely exclude light and deprive bodies of it entirely, while light can never eliminate all shadows from bodies, at least from opaque bodies." (Leonardo Da Vinci)

26/04/2006



25

Fortunately, the renaissance artist Leonardo Da Vinci has left us with a number of statements referring to his observations on light, shadows, colour, and reflections.

Although these may refer primarily to the art of painting, it should be a comfortable transition for an LD to view these observations from the platform of architectural lighting design.

Here are other examples on the subjects of light and shadow:-

"Shadow is the absence of light or simply the opposition of opaque bodies that intercept the rays of light. (already discussed)

Shadow is of the nature of darkness;

Light is of the nature of splendour.

They are always combined on the body, and **shadow is more powerful than light**, for it can completely exclude light and deprive bodies of it entirely, while light can never eliminate all shadows from bodies, at least from opaque bodies."

**building  
performance  
congress**

from Renaissance to Rodin....  
....from lighting design to shadow design

Messe Frankfurt

**Rodin and Shadow Design in Sculpture**

**Auguste Rodin  
(1840-1917)**

26/04/2006

Light PLAN

26

## **Rodin and Shadow Design in Sculpture**

About 340 years after Michelangelo and Da Vinci started to give us their great works, the 19th century artist Auguste Rodin (1840-1917) was born in Paris, France.

Rodin soon became a great admirer of Michelangelo, however he chose to interpret form by sculpturing in a completely different way than any predecessor.



26/04/2006

 Light PLAN

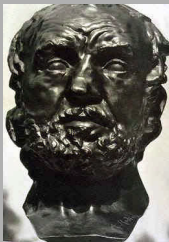
27

Contrary to the preference for white marble during the renaissance era, Rodin preferred to model first in plaster, then create the finished sculpture in bronze, being a dark, semi-specular material. He emphasised shadow rather than reflected light.

Forced earlier to suppress his artistic passion, I take heart knowing that Rodin reached the grand old age of 40 years before being in a financial position to pursue his preferred line of work.....in his case, sculptures of emotional turmoil reinforced with shadow.

Recently, when I had the opportunity to examine Rodin's style first-hand, I found that he regularly over-emphasised the body's concave shapes, by carving large gaps between ribs, and creating dark chasms between major muscle groups, and limbs.

Also, individuals within a sculptural group are often separated by darkness. Afterwards, during the preparation of this paper, I learned that many others agree.



26/04/2006

 Light  
PLAN

28

Nicholas Pioch, art critic and founder of the Webmuseum, says, “By looking at the details we see Rodin’s ability to convey feeling through facial expression and through hands. He cuts the hollows of the face deeply to assure **strong shadows**, and his textured surfaces catch the subtle **variations of light** and heighten the sense of life and movement....”.

Another quotation, this time from “Me and Rodin” by Jerry Atkin, published in Motion Magazine, Sept 20, 1999, “I don’t know if thoughts billowed in Rodin’s mind, but forms surely did; the form of his art, **the patterns of light and dark, patterns of shade and shape filling up the sky.....**”.

And the last one of many (too numerous to include) from the Milwaukee Art Museum, USA, “Arguably the only figurative sculptor to rival Michelangelo, Auguste Rodin created a body of work that translated into sculpture....the transitory **effects of light on form**. His rough-hewn and modelled surfaces **capture light** in ways that are the sculptural equivalents of pictorial broken brush strokes and fragmentation of colour”.

Rodin wrote himself, “.....for sculpture deals essentially with the purposeful relationships of volumes in space”.

Interestingly, architectural lighting design has a parallel purpose of interpreting those same volumes.



**"The Thinker"**  
(1902) by **Auguste Rodin**. Musee Rodin, Paris.  
(garden)  
Enlarged bronze.

26/04/2006



29

**"The Thinker"** (1902) by **Auguste Rodin** (Musee Rodin, Paris).

Enlarged bronze.

One of Rodin's most popular sculptures located in an outdoor garden setting.

When I was visiting and shot this photo, the sky is overcast with no direct sunlight.

Weathering over the years has caused the bronze to tarnish to a verdigris finish.

Notice that while overall bodily form comes to us in diffuse reflected light, emphasis of detail is by way of shadow.

**Umbra** (or dark) shadow appears to dominate the detail, while **penumbra** (or grey) shadow appear non-existent.

There is a distinct contrast between light and shadow.



**"The Thinker"**  
(1902) by **Auguste Rodin**. Musée Rodin, Paris (garden)

Enlarged bronze

+

**"The Thinker"**  
(1880-1882) by **Auguste Rodin**.

Original size small bronze (interior)

26/04/2006



30

Compare this with the play of light from a smaller bronze **"Thinker"** (right).

This is one of many official copies, located in an interior setting and illuminated with electric light sources.

It has not been weathered like the enlarged bronze.

The small sculpture appears dark and semi-specular.

Again, **umbra** dominates the detail, while **penumbra** appears non-existent.

And again, there is a distinct contrast between light and shadow.





**“The Three Shades”** (c. 1903)  
by **Auguste Rodin**  
Musée Rodin, Paris.  
(garden)

26/04/2006



31

**“The Three Shades” (c. 1903) by Auguste Rodin (Musée Rodin, Paris).**

This is an enlarged bronze. Originally they were separate figures, and Rodin joined them later.

Although located outside, this unweathered sculpture is similar in finish to the **small “Thinker”**, being dark and semi-specular.

Although reflected daylight is very noticeable, dark areas (**umbra**) still dominate the sculpture, while any distinct graduation between shadow and light (**penumbra**) is missing.

**building  
performance**  
congress

from Renaissance to Rodin....  
....from lighting design to shadow design



**"The Three Shades"** (c. 1903)  
by **Auguste Rodin**  
Musée Rodin, Paris.  
(garden)



**"The Thinker"**  
(1902) by **Auguste Rodin**. Musée Rodin, Paris (garden)  
Enlarged bronze.



26/04/2006

32

A closer view (image top left) confirms this extreme contrast.

When compared to the outdoor enlarged version of **"The Thinker"** (image bottom right), notice the relationship between **umbra** and reflected light has changed. Although reflected light is now specular rather than diffuse, the dominance of the **umbra** still persists, and **penumbra** still appears non-existent.





**“The Three Shades”** (c. 1903)  
by **Auguste Rodin**  
Musée Rodin, Paris.  
(garden)



**“The Three Shades”** (small original)  
by **Auguste Rodin**  
Musée Rodin, Paris. (interior)

26/04/2006



33

To confirm consistency of this notion, the original bronze miniature version of the **“The Three Shades”** is located inside the Musée Rodin (Hotel Byron) and illuminated with electric light.


This small sculpture still appears dark and semi-specular, without any apparent **penumbra**.


The interior lighting is a blend of daylight and spotlights (directional diffuse).

At this stage, it appears that neither an interior location nor an exterior location necessarily alters the strength and relationship of shadow and reflected light.

**building  
performance**  
congress

from Renaissance to Rodin....  
....from lighting design to shadow design






**“Age of Bronze” by August Rodin**

small bronze copy  
(one of many)

26/04/2006



34

There are many other examples of Rodin’s work of which to refer, however this shall be the final one in this section.

This is Rodin’s earlier work **Age of Bronze**, created in 1877.

In her book entitled “In Search of Independence”, author and art critic Antoinette Le Normand-Romain writes, “The work had, in fact, disconcerted the public not only because of its sensitive modelling, quivering with life under **the play of light** produced by the slight sway of the hips, but also by the absence of subject” (end of quote).

Many of Rodin’s sculptures were controversial on a social scale at the time, however here we will discuss the relationships between **light and shadow** modelling as we now consider the transformation of the sculpture from plaster to bronze.



**"Age of Bronze" by  
August Rodin**

small bronze copy  
(one of many)

+

**"Age of Bronze"  
(1877) by August  
Rodin.** St Petersburg  
Academy of Arts

full size plaster  
original



26/04/2006

35

The original white plaster model of **Age of Bronze** (St Petersburg Academy of Arts) is presumed to embody the basic attributes of the soon-to-be cast bronze sculpture.

Apart from the diffuse nature of reflected light that we would now expect, the model appears to lack any strong detail we are used to seeing in Rodin's finished bronze works.

**building  
performance**  
congress

from Renaissance to Rodin....  
....from lighting design to shadow design



**"David"** (c. 1501-1504) by **Michelangelo Buonarroti**. Gallerie dell'Accademia, Florence.

+

**"Age of Bronze"** (1877) by **August Rodin**. St Petersburg Academy of Arts




26/04/2006


36

Surprisingly, the striking resemblance of the play of light and shade across the monolith, as seen in Michelangelo's "David", is noteworthy at this point.


**building  
performance  
congress**

from Renaissance to Rodin....  
 ....from lighting design to shadow design





**“Age of Bronze” by August Rodin.**  
 Middelheim Outdoor Sculpture Museum, Antwerp



26/04/2006

37


Although it is unclear whether Rodin made any stylistic changes during the transition (from plaster to bronze), when compared with one of the official cast bronze versions (and there are many), we see the characteristic contrast between the dominant **umbra** (dark) shadow, and the reflected light.

Again, **penumbra** appear non-existent.

**building  
performance  
congress**

from Renaissance to Rodin....  
....from lighting design to shadow design

Messe  
Frankfurt



### Shadow Design Elements

1. an opaque, semi-specular, dark-coloured base material
2. a dominance of deep concave shapes with distinct edges
3. a directional-diffuse (natural) lighting technique

26/04/2006

Light PLAN

38

Similar to Michelangelo, it seems that Rodin has also brought together a set of design elements so as to interpret the form of his major sculptural works in shadow:-

1. an opaque, semi-specular, dark-coloured base material
2. a dominance of deep concave shapes with distinct edges
3. a directional-diffuse (natural) lighting technique

This may be something we also need to sit and think about for a while!



**"Monument to  
Victor Hugo"**  
(c.1900) by August  
Rodin. Musee  
Rodin, Paris (garden)

26/04/2006



39

## Conclusion

The effectiveness of Michelangelo's three lighting design elements and Rodin's three shadow design elements have one noticeable element in common.

The lighting!

It appears that as long as the lighting (daylight or electric light) is directional-diffuse, the other two design elements will enable either a lighting design, or a shadow design.

Therefore, in the context of interpreting the inherent shadows of opaque objects, the base material or object must be semi-specular and dark-coloured in order for the LD to even consider the opportunity of an effective shadow design.

Further, the opaque material must also have a dominance of deep concave shapes with distinct, (even sharp) edges inherent in itself.

If the subject meets this criteria, the LD can have confidence that an effective shadow design is possible.

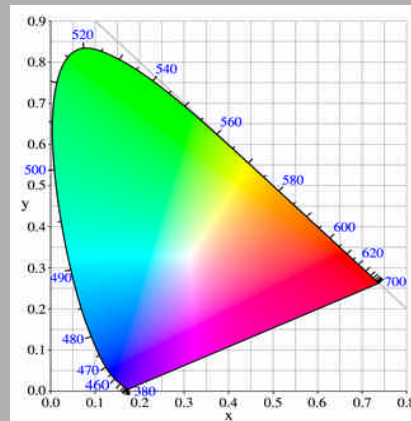
All the LD has to do now is commence the creative lighting design process keeping in mind the requirement for a directional-diffuse lighting technique.



## Future work on shadow design

### Illusionary Shadow

the skilful application of  
complementary coloured light



CIE Chromaticity  
Chart (1930)

26/04/2006



40

### Future Work

This presentation has dealt with shadow design in the context of interpreting opaque objects only. However, there are other types of shadow that have not been discussed.

One type is what I call “the illusionary shadow”.

A shadow that is not cast by an object of any description.

It is without **umbra and penumbra**.

It is a **perceived shadow** created by the skilful application of two complementary coloured light sources. (briefly explain using yellow and deep blue as an example).

This technique of **shadow design** has been used in the stage lighting profession since before 1935, however there appears to be limited access to any documented reference or practical learning material on this subject for architectural LD's.

I have already drawn the conclusion that my search for a deeper understanding of “**shadow design**” has only just commenced.



**building  
performance**  
congress

from Renaissance to Rodin....

....from lighting design to shadow design

26/04/2006

Messe Frankfurt

Light PLAN

41

It seems to me that just as the 15th century produced an ability to depict the realism of light, the 19th century brought us the depiction of shadow in a new way.

Could it be that during this 21st century, LD's will become fully skilled in depicting shadow in their architectural designs in a brand new way?

I simply invite you to join me in the quest!

**building  
performance  
congress**

Messe Frankfurt

from Renaissance to Rodin....

....from lighting design to shadow design

END

James Wallace MIES, ELDA,

26/04/2006

Light PLAN

42

### Summary

There are two distinct parts of a shadow. The totally dark part of the shadow known as umbra, and the partially darkened or grey outer area known as penumbra. The late 15th century Italian renaissance period produced evidence of artist's emerging skills in the understanding of the play of light and shadow, and an ability to realistically interpret them in paintings and sculpture. Later in the period, this skill became fully developed in painting, applying a subtle light and shade balance known as chiaroscuro. In sculpture, this paper proposes that a combination of three key lighting design elements were developed to successfully interpret a similar realistic balance. Continuing into the 16th century, and possibly taking a lead from Da Vinci's statement that "shadow is more powerful than light", artists further advanced in the skill by applying a technique known as tenebrism, a somewhat striking and unnatural contrast in the depiction of light and shadow. Much later, the 19th century artist August Rodin developed a sculptural style where dark shadow (umbra) dominates. This paper suggests this technique is also a type of tenebrism, and puts forward a combination of shadow design elements that Rodin applied so as to interpret the form of his major sculptural works. These three design elements could form the basis of a framework for LD's to consider when contemplating the effectiveness of a proposed shadow design for the interpretation of opaque objects. Future work is required to explore the technique of creating illusionary shadow, and thus add to the number of shadow design elements LD's have available to them.

END