hi Eric here with 30 by 40 design

workshop today I want to do a short

course on how to borrow light and it

begins with a little bit of a history

lesson in 1915 the thirty-eight story

equitable building in New York City was

the largest office building in the world

it contained 1.2 million square feet of

office space and consumed nearly every

available square foot of its diminutive

lot it cast an equally large shadow on

its neighborhood in lower Manhattan its

construction inspired the enactment of

the city's 1916 zoning resolution which

was designed to preserve access to light

and air at the street level the

resolution prescribed specific

limitations for a building's envelope

its outer walls and would go on to shape

the stepped forms that you see today on

many of the iconic towers in the city it

underscores the importance that access

to daylight had in shaping even the

largest of cities the individual

buildings that make up those cities and

more broadly sensible building design

with an increasing focus on sustainable

design practices the smart use of

natural daylight in our homes is no

longer a luxury it's become a necessity

at the heart of any good day lighting

strategy is a concept of borrowed light

the capture of light falling on the

exterior of a home and transporting it

to the spaces where it's needed the Sun

delivers an incredible amount of light

energy to us each day to get an idea of

just how much it helps to understand the

standard by which we use to measure

light intensity the foot candle light

from a full moon is roughly 1 foot

candle while the sun's illuminance on a

cloudless day is roughly 10,000 foot

candles of course clouds and the

filtering effects of glass can reduce

the actual amount of light that reaches

the interiors of our homes by some fifty

to ninety percent but one thousand to

five thousand foot candles is still an

amazing amount of light given that we

only need around thirty five foot

candles to comfortably read by

harnessing this light energy isn't as

simple as placing a window on an

exterior wall interior rooms without

access to an exterior wall or spaces

oriented in a way that restricts access

to adequate daylight are common problems

each with a unique solution here's a

look at some of those solutions walls

interior walls built to collect and

disperse light rather than restrict it

are one solution the wall shown here

gathers into

direct light from an adjacent light

filled bathroom and capitalizes on

reflective nature of the bath wall

surfaces to diffuse it into the bedroom

clear glass will transmit the greatest

amount of light into adjacent spaces and

because the glass here is positioned

above eye-level the bath remains private

and sound isolated the white walls of

the same bathroom act as the indirect

light source for the nearby bedroom

bright neutral colors work well for an

indirect borrowed lighting strategy good

solar exposure is borrowed by the

bedroom simply via the glazed upper wall

because translucent materials reflect

absorb and scatter light they make great

walls for borrowing light the degree of

translucency will affect just how much

light is scattered the effect is similar

to obscuring direct sight but preserving

the passage of daylight diffused light

is comfortable and limits eyestrain

translucency can be achieved in a

variety of ways glass can be sandblasted

or acid etched it can also be textured

or laminated with laminated glass a

plastic interlayer lens a translucent

effect similar to that created by

sandblasting but without the marking

characteristics there are applied films

to consider as well full height glass

walls offer auditory but not visual

privacy when there's limited access to

exterior window space there an obvious

choice the perceived dimensions of our

rooms are naturally increased when we

use the borrowed light concept this

means it works particularly well for

spaces with floor area constraints in

this project the concept of borrowed

light has been applied to the overall

ordering system in place there's a logic

to the order of solid and void and it

offers plenty of light to the bedroom

space the pattern on the glazed wall has

been achieved with a custom film the

design was created from a sketch by the

architect the vaulted ceiling and Clair

story take advantage of a reflected

light from the entire volume of space

stairs another option and an efficient

vehicle for borrowing light in a home is

the stairway it's a natural conduit for

illuminating an often light starved

lower level if the stair can be

positioned to capture and reflect light

from above by either fully glazing it or

using a skylight it's even more

effective

the combination of glass guard and white

walls has made this stairway a light

source for this

pounding rooms a solid wall used here

would have changed this space

dramatically interior windows whether

they're clear or frosted there are

plenty of functional incentives to

borrow light using interior windows the

ones here bring in light from the

adjacent living area while preserving

the nursery's acoustical privacy

interior windows aren't subject to the

same weathering and insulation

restrictions as exterior windows so

they're less expensive to buy and

install making them operable especially

in a stairwell where natural convective

flow is greatest can help to passively

ventilate a space two functional reasons

aside interior windows can offer

unexpected delight why connect a bar in

a powder room I don't really have a good

reason but I don't really need one I

love the idea that the powder room will

look different based on what's on the

top shelf and the time of day in the bar

- the difference is that the powder room

renders to its backsplash can be

appreciated it's these connections that

make architecture interesting linking

spaces doesn't always have to make sense

functionally or otherwise skylights

because the sky dome above is a giant

light source it's hard to find a more

efficient means for borrowing light here

than the skylight on tight urban Lots a

skylight can be used in conjunction with

an interior atrium or light well and be

surrounded by reflective walls to

increase its efficiency this project

utilizes a light whale of sorts allowing

the lower level to borrow light from the

upper skylights the second floor hovers

in the space instead of being extended

to the full width of the gable and the

overall effect is lighter and brighter

the more we open up our interior spaces

the easier it becomes to bounce daylight

around from areas with good solar

exposure to areas with poor exposure

painting the surfaces with a higher

Sheen paint further helps distribute the

light this luminous shower is an example

of how a light well and skylight can

transform a tight space into a pleasant

one additions to existing structures

often compromise the amount of daylight

the original building receives not here

though the skylight insures that the

existing home borrows daylight at its

perimeter transoms similar in concept to

the ideas seen in the first images a

glass transom extends the dimension of a

space and introduces light to a room

without compromising its privacy light

tubes a simple technology solar tubes

channel light to where it's needed

using highly reflective flexible tubing

they're especially effective in private

spaces or spaces where a lot of glass

isn't desirable although short tubes are

used in this project concept is similar

six large tubes like this otherwise dark

space a bold and considered element this

choice of multiple solar tubes rather

than a single one not only feels more

intentional but as you can see it's also

exceptionally functional a grouping of

three is usually a good starting point

but the more the better

you