

History in Workplace Design

- **Taylorism (ca. 1904):**
 - Created by Frederick Taylor
 - Large open environment supervised by the manager
 - Created the manager who occupied his own personal space
 - Similar to a factory floor
 - Rows of desks
- **Bürolandschaft (ca. 1960)**
 - “Office landscape” created by socialist values in Germany
 - Elimination of executive offices
 - Encouraged collaboration through layout (pinwheels and side by side work stations)
 - Undivided
 - Grouping by function
- **Action Office (ca. 1968)**
 - Herman Miller was inspired by Bürolandschaft
 - First modular business furniture system
 - Made up of varying dividers and work surfaces
 - Created the cubicle
- **Cube Farm (ca. 1980)**
 - Extreme version of the cubicle
 - A median between desk and office
 - Modular walls
 - Made from inexpensive materials
 - Created privacy, but decreased productivity



- **Virtual Office (ca. 1994)**

- No personal desks
- Severe decrease in productivity
- Lack of personal space left employees feeling out of place
- Employees had to grab supplies and find a place to work

- **Networking (present)**

- Moving away from cubicles
- Encourages socializing amongst workers
- Separate work areas without dividers
- Mobile furniture



Trends in Workplace Design & Furniture Systems

- **Collaboration**

- Variety of settings to support all work activities
- Flexible spaces that can have multiple uses
- Colors are used to influence mood and creativity
- Democratic team structures

- **Privacy**

- Quiet areas for private work or meetings
- Stay away from exposed ceilings to improve acoustics



- **Overall production**

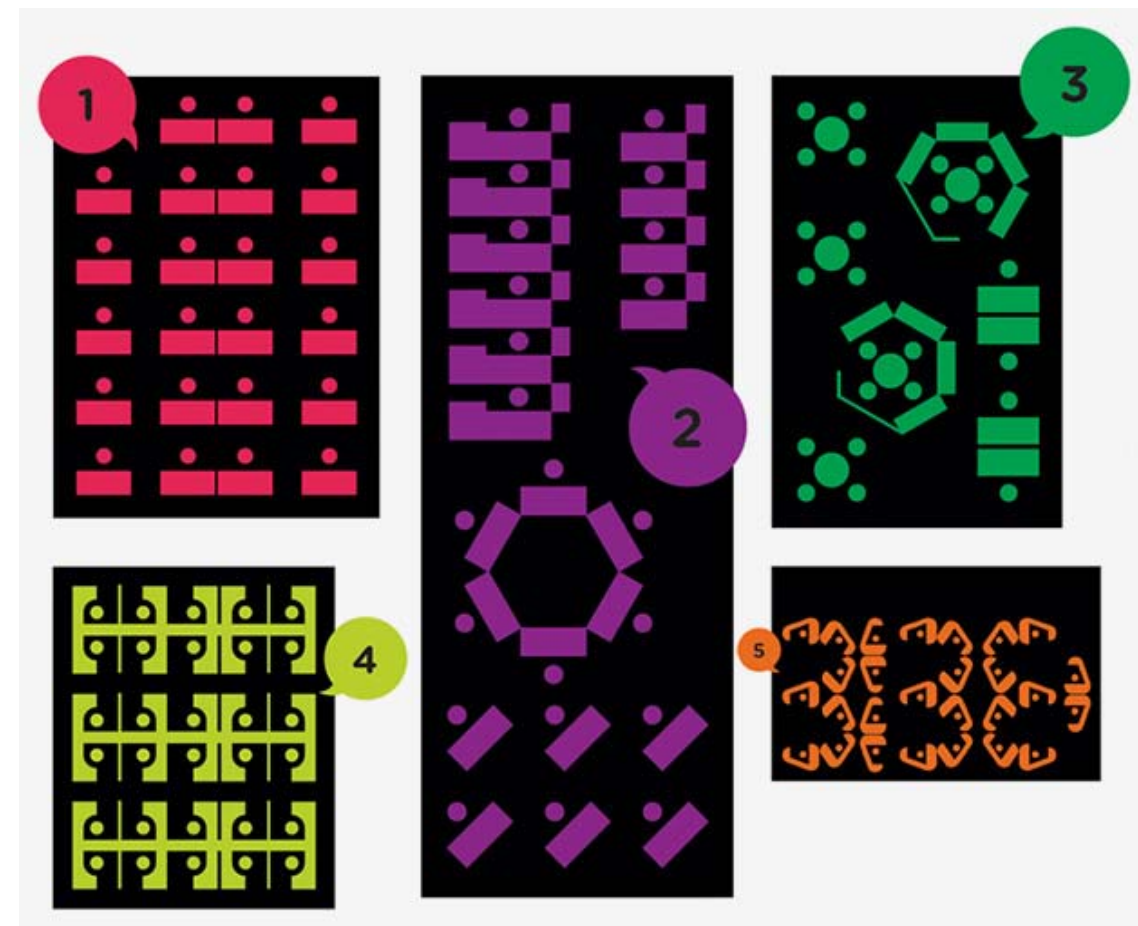
- Spaces are meant to motivate employees
- Companies need spaces that support their missions and values
- Companies value wellness and sustainability of their employees

- **Organization**

- Clutter free spaces help productivity

- **Wellness**

- Green materials encourage employees to live healthier lives
- Ergonomically friendly furniture
- Separate lounge areas and kitchen areas for breaks
- Greenery and plants improve air quality and employee moods



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THE WORKPLACE AND SOCIAL BEHAVIOR

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THE GENERATIONS

Silent Generation (1929-1945)

- Great Depression, World War Two, Migration to the Suburbs
- Caused this generation to be conservative with minimal pampering

Baby Boomers

-Traditionalists (1946-1954)

- Cuban missile crisis, civil rights movement, peace corps, Vietnam war
- Experimental, free spirited and social cause oriented

-Generation Jones (1955-1964)

- Moon landing, economic recession, Watergate, Iranian hostage crisis
- Impatient, influenced by pragmatism

Generation X (1965-1979)

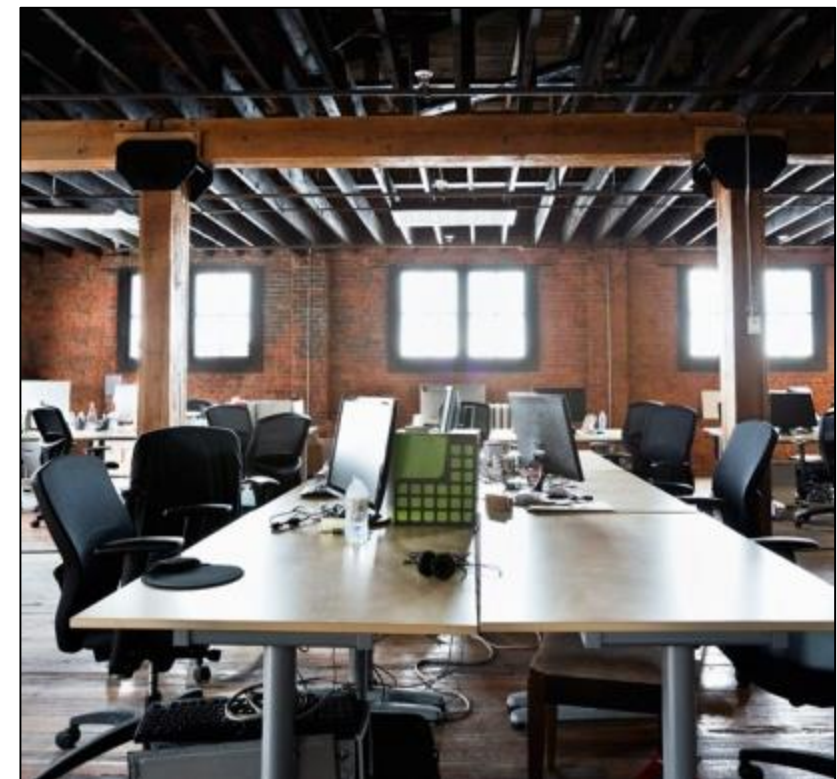
- Ronald Regan, fall of the Berlin wall, MTV launch
- Faced with difficult job market and labeled slackers, perceived as cynical

Generation Y (1980-1997)

- 911, social media, portable devices, computing
- Embrace a multitasking work lifestyle
- Take a constructive approach to creating change for a greater good

ACCOMODATING ALL GENERATIONS

- In today's diverse workforce differences can mean accommodations but differences can also mean a much richer workforce
- In order to create a more cohesive work environment communication should be fine-tuned; taking employee suggestions is important for works to have a voice in the work place, providing feedback will help employees feel part of a team, consider a flexible work schedule which may help improve productivity and employee retention
- According to Business management Daily 72% of millennials find it a company's commitment to being green important
- Take note that millennials are known for frequent job hopping

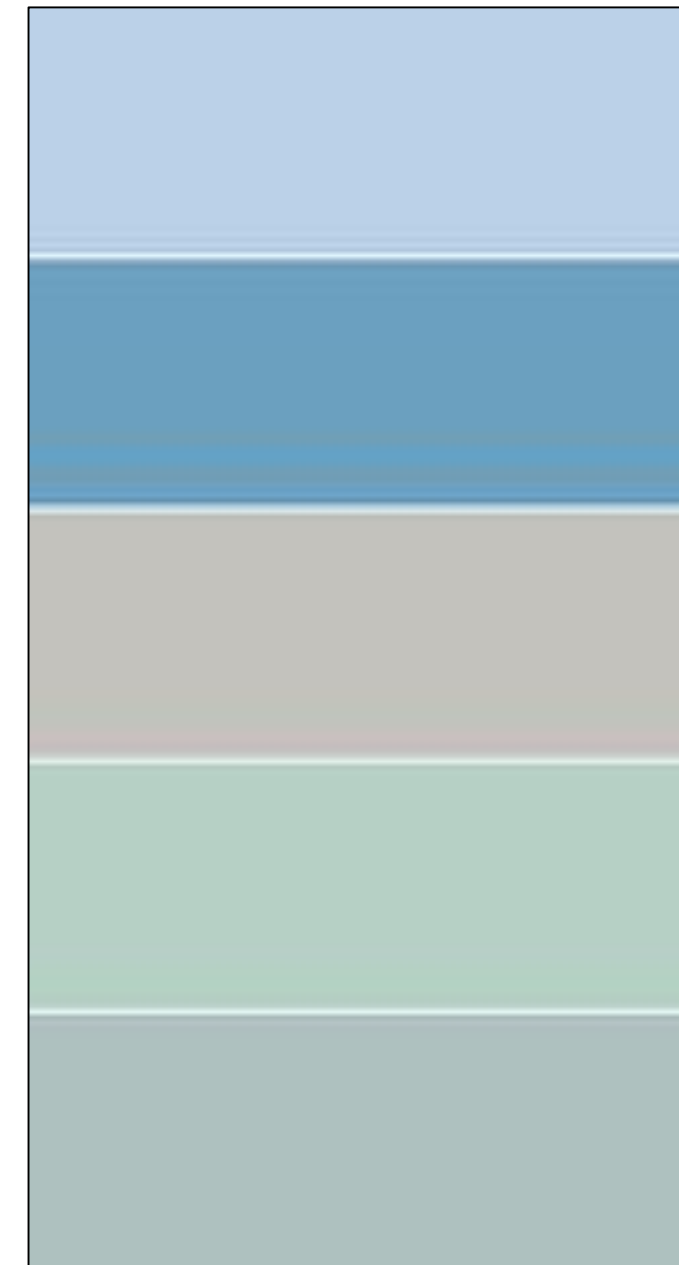


SOCIAL BEHAVIOR IN THE WORKPLACE

- Levels of responsibility in the workplace- every generation has inherit tendencies that effects their work ethic
- Social behavior is heavily influenced by the design of the workplace
- Generational differences relative to how people communicate may cause misunderstandings, difficulties in attracting employees and gaining employee commitment as research shows that communication is based on generational backgrounds
- Each generation has distinct attitudes, behaviors, expectations, habits and motivational buttons
- Cause of tension within the workplace is each generation thinking that the others don't understand their way of thinking

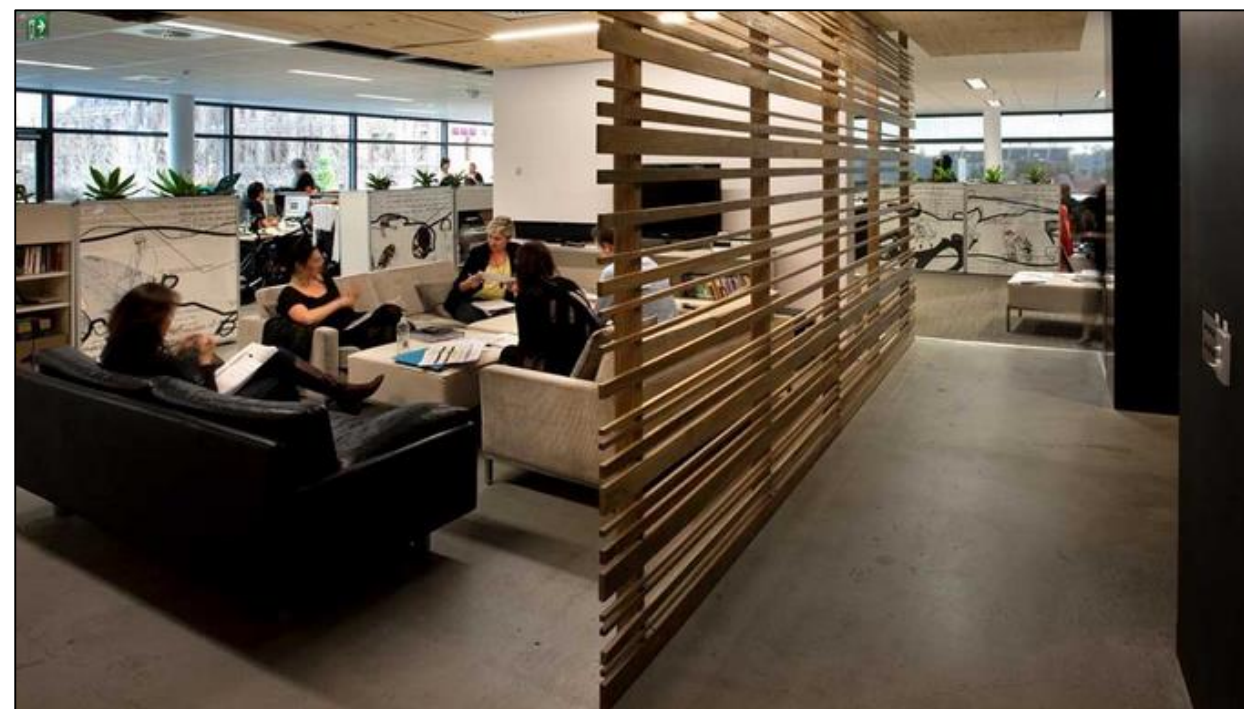
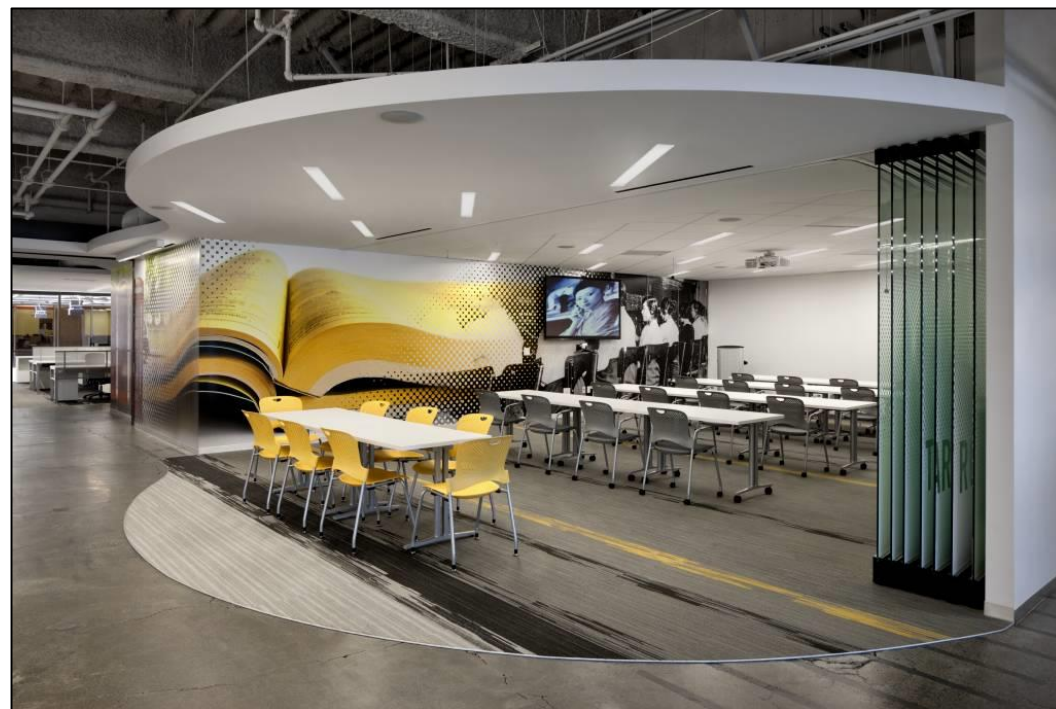
HISTORY OF DESIGN IN THE WORKPLACE

- Baby boomers went to work for the sole objective of getting a paycheck making it hard for them to understand the importance of aesthetics in the work environment
- The work itself hasn't changed but how the workers go about it has
- The office has always served as a place of social interaction



DESIGN TRENDS IN THE WORKPLACE

- The gym has incorporated itself into the business world allowing workers to work off stress while making connections that follow them right back to the office
- Many offices display open concepts within the work environment to encourage interaction; intimate scale, transparent materials, open spaces and flexible furnishings are encouraging personal dialog and interaction in restaurants, club and entertainment spots
- Nesting is a popular trend in the workplace as it promotes calming tones and casual environments



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http://www.usgs.gov/humancapital/e cd/mentoringreadinglist/WP_GenerationalDifferences.pdf

<http://www.nextep.com/generations-workplace/>

<http://www.businessmanagementdaily.com/partner/40558/changing-your-workplace-to-accommodate-the-new-generation-of-employees-4-strategies-to-meet-millennials-needs>

Team 3: Nikki, Jackie & Cindy

Team 3: Richmond VA

Neighborhood/Town History
Applicable Fire/Life Safety Codes
Local Preservation Codes/Credits

History of Richmond, VA

- Located along the James River.

- Port, and location for mills

- Establishment of Fort Charles led to English Settlement

- In 1780 VA state capital was moved from Williamsburg, VA to Richmond, VA

- “Richmond became a center of activity prior to and during the Revolutionary War. Patrick Henry’s famous speech “Give me Liberty or Give me Death,” was delivered at Richmond’s St. John’s Church and was said to have inspired the House of Burgesses to pass a resolution to deliver Virginia troops to the Revolutionary War in 1775. One year later, the Declaration of Independence was adopted by the Second Continental Congress (History of Richmond, Virginia).”

- Hurricane Agnes hit Richmond in 1972 with 16 inches of rain. The James River flooded when it reached 6.5ft over the 200-year- old record. Because of this flood, they built a floodwall to prevent overflowing waters.

- L. Douglas Wilder was the first African-American to be elected as a governor in America.

- “In an attempt to lure more tourists to the history- rich area, the Richmond Civil War Visitor Center, operated by the National Park Service opened three floors of exhibits and artifacts in the old Tredegar Iron Works in 2000 (History of Richmond, Virginia).”



Hurricane Agnes Aftermath



Richmond Skyline



The City Revolves around the James River

Applicable Fire/Life Safety Code

-Statewide Fire Prevention Code

-<http://www.cmdgroup.com/building-codes/virginia/>

<http://www.richmondgov.com/planninganddevelopmentreview/PermitsInspections>

[Bureau.aspx](#)

-

<http://www.dhcd.virginia.gov/StateBuildingCodesandRegulations/PDFs/2009/Code%20-%20SFPC.pdf>

Local Preservation Codes/Credits

-2 forms of historic properties: individually owned on historic registry & state owned historic district.

-The Virginia Landmarks Register and National Register of Historic Places

-Section 106 of the National Historic Preservation Act.

-There are over 130 individual state and federal designations in Richmond and 42 History Districts containing more than 19,000 properties.



Historic Building- Main Street Station- Richmond, VA



Historic Building- Blues Armory- Richmond, VA

Works Cited

"Discover Richmond 2013 - Historic Buildings, Main Street Station." *Richmond Times-Dispatch*. N.p., n.d. Web. 23 Sept. 2015.

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"Richmond, VA." Richmond VA Planning and Development Review Historic Preservation Division. Web. 23 Sept. 2015.

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"United States." *Integral Group Deep Green Engineering Richmond VA Comments*. Web. 23 Sept. 2015.

HEALTHY BUILDING

SYSTEMS



MATTHEW BRACKETT

ASHLEY SOWA

LISA DUERR

RECOMMENDATIONS

- Offer natural daylight and views to the outdoor surroundings.
- Provide sufficient and fresh air quality and thermal comfort.
- Reduce CO2 levels and other air pollutants.
- Acquire ENERGY STAR labeled products.
- Bringing plants into work spaces can help freshen air supply.
Such as: Bamboo palm, rubber plant, and peace lily

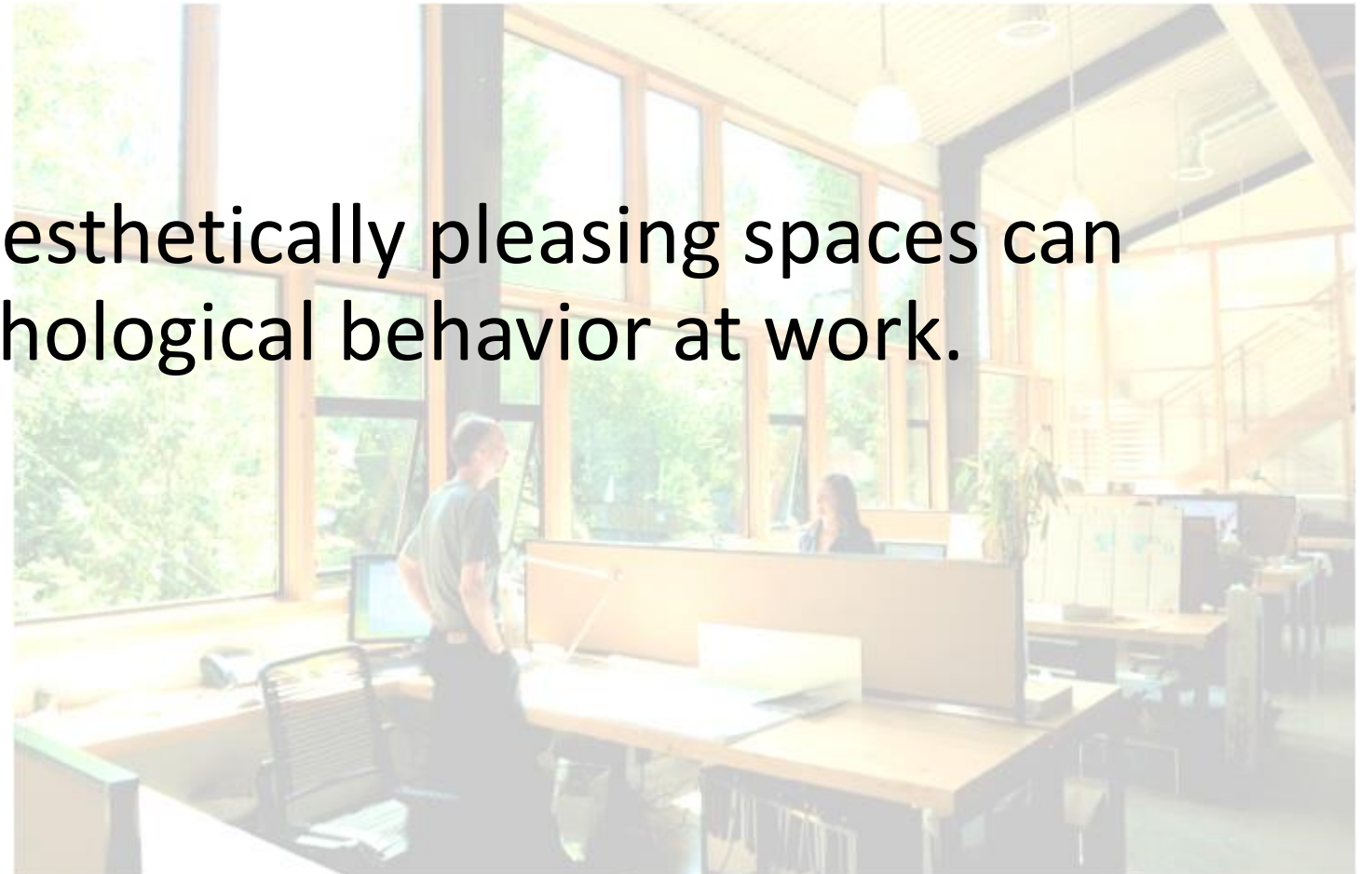
RESEARCH

Research shows that it is more beneficial to work in low temperatures compared to high temperatures environments. It is also best for workers to have the ability to make personal adjustments (ex: blinds, fans, desk height, and chair height). By organizing the spaces into “neighborhoods” it can reduce the feeling overcrowding.



DESIGN

- Many factors contribute to human work performance.
Including: ability, motivation, and opportunity.
- The specific design of work environments can improve wellbeing and work ethic.
- Perception of functional and aesthetically pleasing spaces can greatly effect employees' psychological behavior at work.



CITATION

https://www.wbdg.org/design/promote_health.php

http://www.worldgbc.org/files/6314/1152/0821/WorldGBC_Health_Wellbeing_productivity_Full_Report.pdf

<http://www.hok.com/thought-leadership/workplace-strategies-that-enhance-human-performance-health-and-wellness/>

Sustainability in Interior Environments

LEED Building Credits

- 7 goals, or “Impact Categories” of a LEED certified building:
 - Enhance human health and well being
 - Reverse contribution to climate change
 - Enhance community, social equity, environmental justice and quality of life
 - Build a greener economy
 - Promote sustainable and regenerative resource cycles
 - Protect biodiversity and ecosystem services
 - Protect and restore water resources
- LEED buildings earn credits, up to 100 points are available after prerequisites are met. Plus additional points for Innovation and Regional Priority adding up to a possible of 110 points.
- 5 rating systems to choose from
 - Interior Design and Construction (ID+C)
 - Building Design and Construction (BD+C)
 - Operations and Maintenance (O+M)
 - LEED for Homes
 - LEED for Neighborhood Development
- A commercial building can earn one of the 4 levels of certification:
 - LEED Certified 40-49 pts.
 - LEED Silver 50-59 pts.
 - LEED Gold 60-79 pts.
 - LEED Platinum 80+ pts.

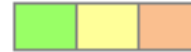




LEED v4 for ID+C: Commercial Interiors

Project Checklist

Y ? N



Credit Integrative Process 2

0	0	0	Location and Transportation	18
Y			Credit LEED for Neighborhood Development Location	18
Y			Credit Surrounding Density and Diverse Uses	8
Y			Credit Access to Quality Transit	7
Y			Credit Bicycle Facilities	1
Y			Credit Reduced Parking Footprint	2

0	0	0	Water Efficiency	12
Y			Prereq Indoor Water Use Reduction	Required
Y			Credit Indoor Water Use Reduction	12

0	0	0	Energy and Atmosphere	38
Y			Prereq Fundamental Commissioning and Verification	Required
Y			Prereq Minimum Energy Performance	Required
Y			Prereq Fundamental Refrigerant Management	Required
Y			Credit Enhanced Commissioning	5
Y			Credit Optimize Energy Performance	25
Y			Credit Advanced Energy Metering	2
Y			Credit Renewable Energy Production	3
Y			Credit Enhanced Refrigerant Management	1
Y			Credit Green Power and Carbon Offsets	2

0	0	0	Materials and Resources	13
Y			Prereq Storage and Collection of Recyclables	Required
Y			Prereq Construction and Demolition Waste Management Planning	Required
Y			Credit Long-Term Commitment	1
Y			Credit Interiors Life-Cycle Impact Reduction	4
Y			Credit Building Product Disclosure and Optimization - Environmental Product Declarations	2
Y			Credit Building Product Disclosure and Optimization - Sourcing of Raw Material	2
Y			Credit Building Product Disclosure and Optimization - Material Ingredients	2
Y			Credit Construction and Demolition Waste Management	2

Project Name:
Date:

0	0	0	Indoor Environmental Quality	17
Y			Prereq Minimum Indoor Air Quality Performance	Required
Y			Prereq Environmental Tobacco Smoke Control	Required
Y			Credit Enhanced Indoor Air Quality Strategies	2
Y			Credit Low-Emitting Materials	3
Y			Credit Construction Indoor Air Quality Management Plan	1
Y			Credit Indoor Air Quality Assessment	2
Y			Credit Thermal Comfort	1
Y			Credit Interior Lighting	2
Y			Credit Daylight	3
Y			Credit Quality Views	1
Y			Credit Acoustic Performance	2

0	0	0	Innovation	6
Y			Credit Innovation	5
Y			Credit LEED Accredited Professional	1

0	0	0	Regional Priority	4
Y			Credit Regional Priority: Specific Credit	1
Y			Credit Regional Priority: Specific Credit	1
Y			Credit Regional Priority: Specific Credit	1
Y			Credit Regional Priority: Specific Credit	1

0 0 0 TOTALS Possible Points: 110

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80+

Embodied Energy

- What is Embodied Energy?

- Embodied energy is the total energy required for the extraction, processing, manufacture and delivery of building materials to the building site.

- Important things to consider about embodied energy

- Durability of building materials
- How materials can be separated
- Using local materials
- Using recycled material
- Specifying standard material sizes
- Less wasted material
- Using materials that are made with renewable energy sources

- Maintenance and Renovation

- More embodied energy is being added over a building's life
- Operational energy consumption depends on how the occupants use it

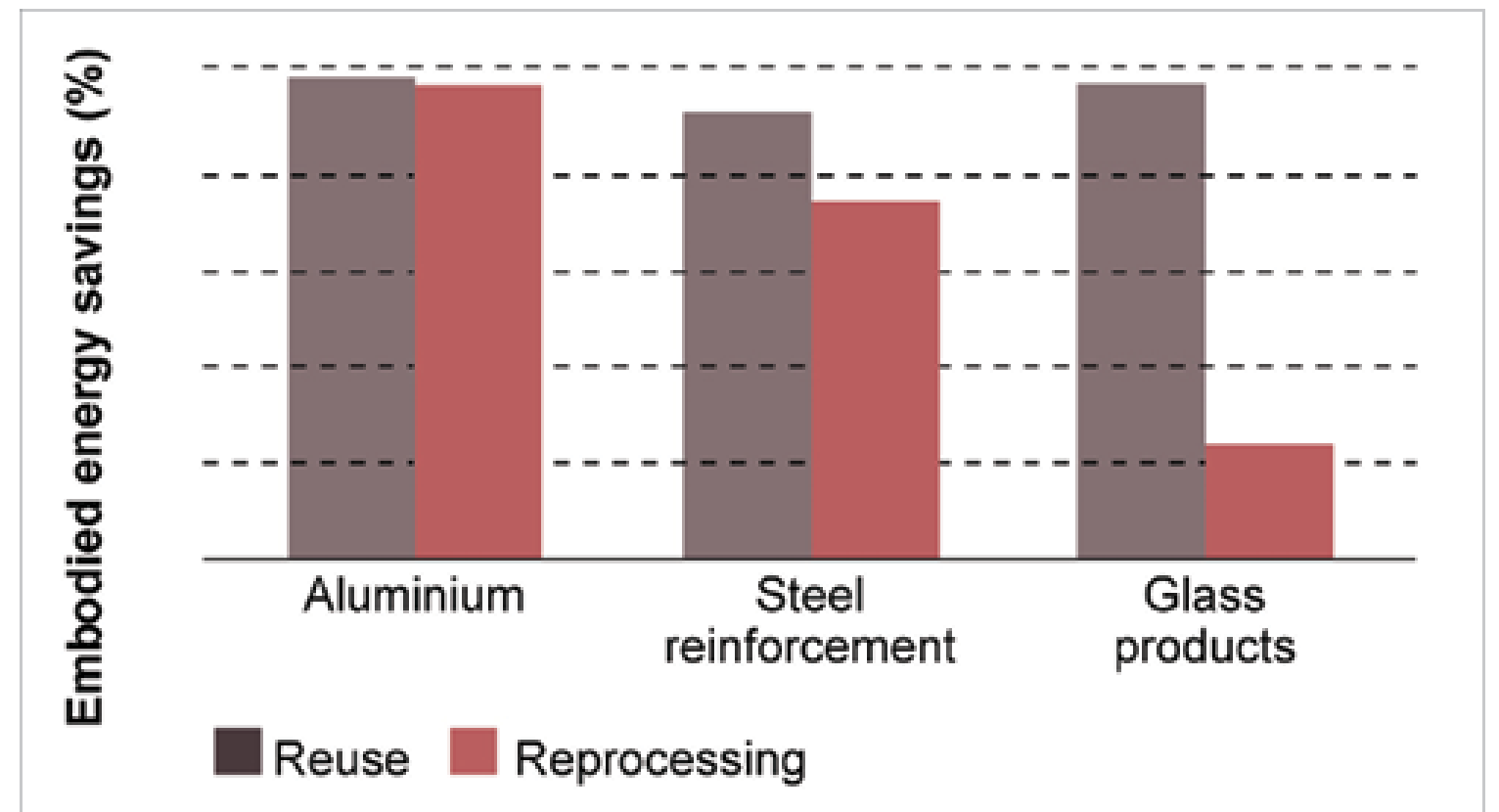
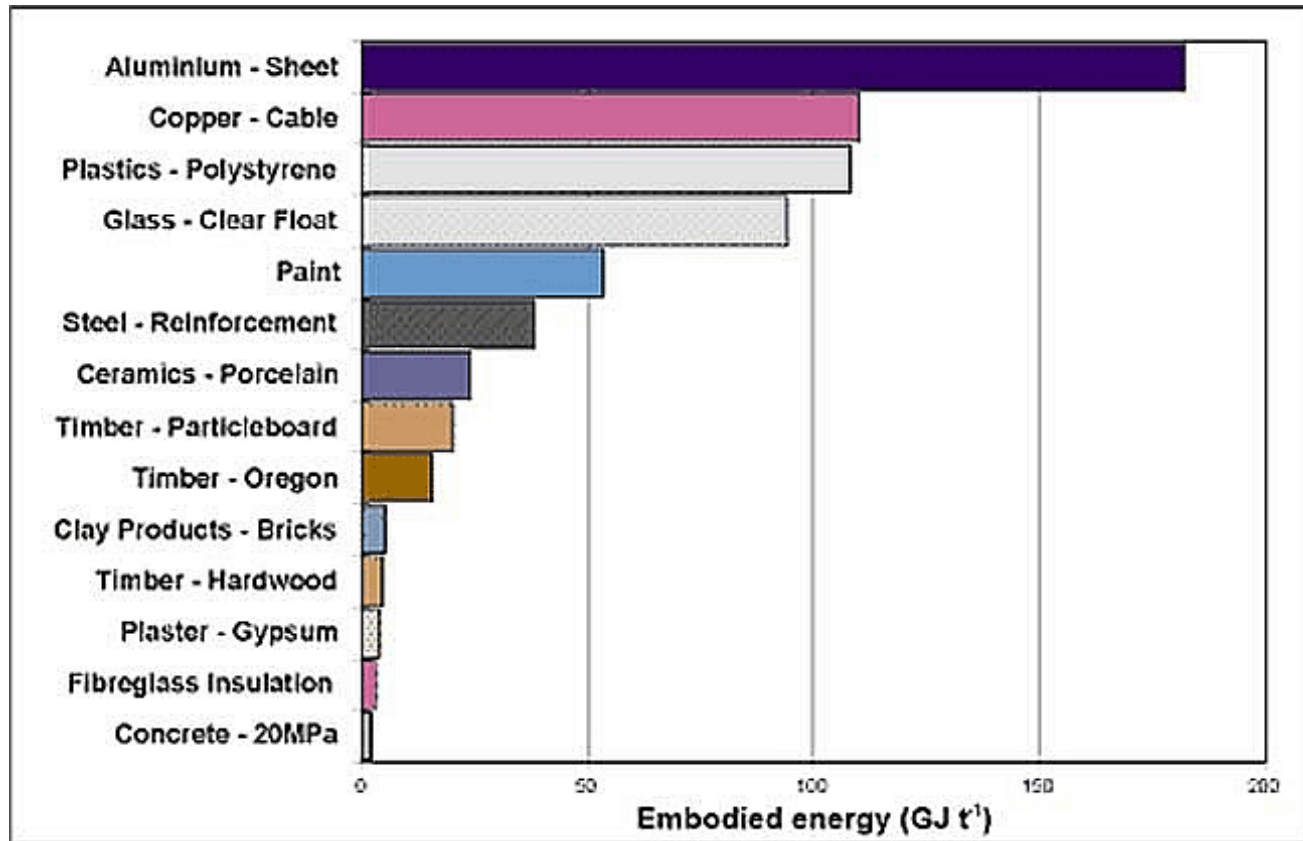
- Assessing embodied energy

- Where the energy in the building is being used and easily measured
- How much energy was used to transport the materials to the building site
- Materials used during construction
- Gross energy requirement (GER)
 - ❖ A measure of the true embodied energy of a material.
- Process energy requirement (PER)
 - ❖ A measure of the true energy directly to the manufacture of the material.

- Reuse and Recycling Materials

- Aluminum- Most energy consumption material
- Steel reinforcement-7th most energy consumption material
- Glass products- 4th most energy consumption material

Materials that consume Embodied Energy in Buildings



Source: CSIRO

TRENDS IN HISTORIC PRESERVATION

- EARLY 19TH CENTURY
 - Started with local efforts to preserve patriotic monuments (Revolutionary War)
 - Several small organizations formed in order to protect the homes of historic figures, parks, and monuments
 - Philadelphia Centennial Exposition of 1876 stimulated a new popularity of buildings representing early structural types and distinct architectural styles.

- POST WWII ERA
 - Many social and infrastructural problems came about
 - U.S. National Trust for Historic Preservation emerged and developed a specific set of goals for preservation
 - Their mission was to “protect structures providing leadership and education” and to “save America’s diverse historic places and revitalize [its] communities.”
 - Widespread access to automobiles and a decline in gas prices led to the first wave of historical tourism
 - National Historic Preservation Act of 1966 is enacted

- 1980s & 1990s
 - The actual business of preservation emerged
 - Organizations began to renovate historic buildings for impressive office, retail, or residential spaces
 - This resulted in a competition in downtown areas because rent is normally higher in these areas and they draw in the most people

- PRESENT
 - Preservation has since become an “art, a business, an inexact science, and for many, a passion”
 - Has inspired many people and brought about a new way of reconstruction
 - Has yet to become “as pervasive a national priority as recycling, energy conservation, or the protection of endangered species”