Designing for Affordability: Change, Context, and Co-Thriving

A Presentation to Wyoming AIA
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Designing for Affordability – my role

- Schechter’s Equation for Life
  - S=R-E
  - Satisfaction equals Reality minus Expectations

- Calibrating expectations
  - I’m not a designer
    - Very little black in my wardrobe
  - So who am I? What can I offer you?
The Charture Institute: a think tank examining and working with communities closely-connected to nature

Charture: What We Do

- Learn
- Teach
- Fund
- Act
- Inspire

The Charture Institute
Helping human and natural communities Co-Thrive
My goal: offer you context

- The world is hallmarked by rapidly-accelerating change
- The change can be seen as random happenings forming into larger patterns
  - What does affordability mean in this case?
  - What role do design professionals have in such an environment?
  - How do design professionals cope with randomness and rapid change?
Two major themes underlying rapidly-occurring change

- Short-term: random occurrences
- Long-term: patterns emerge
Randomness
Point: A series of random occurrences may be only that. Human instinct is to make it more than that.

- Lesson for designers: The end result of your actions is more than a series of random occurrences; its consequences more lasting
Patterns
Schechter’s Maxim

- Technologies change faster than economies
- Economies change faster than perceptions
- Perceptions change faster than politics
The Industrial Revolution began in the 1760s in England; i.e., right around the time of the American Revolution
Patents: a proxy for the pace of technologic change

US Patents: 1790-2015

Total Patents Issues: Annual and Cumulative

- Annual patents issued (Y1)
- Total patents issued (Y2)
The pace of change is accelerating geometrically
Technologic changes have improved the quality and quantity of human life
Today billions of people enjoy better lives than all but royalty did 250 years ago.

Human Life Expectancy: 1750-2015

All Residents of United Kingdom
Bringing it closer to home, over the past 80 years the world has grown faster than the US or WY

![Graph showing relative population growth (1930=100) for World, US, and WY from 1930 to 2010.](image-url)
But all have paled in growth v. Teton County WY
6 forces interacted synergistically to produce Teton County’s remarkable growth

- Technology
- Economy
- Transportation
- Mores
- Values
- Suburbs becoming cities
Yet this isn’t new – these same forces had already produced the suburbs that transformed the world’s major urban areas.

What is new? Virtual suburbs (with their own physical suburbs down the canyon or over the hill)
The growth of Teton County WY’s physical suburb...

World, US, WY, Teton Counties: 1970-2010

Relative Population Growth (1970=100)
The goal in all cases was an improved quality of life. Physical suburbs were perceived as cleaner, healthier, better places to raise a family. Ditto virtual ones.

- *Ditto leaving the Old World for the New...*
A personal history of technologic improvements: 1983-2016
Fundamental question for you: In the face of such rapid change, what is timeless in design?
Let’s switch gears a bit and talk about you/WY. What is it about Jackson Hole?

WY AIA Membership: October 2016

Total # of Firms = 57

Firm Location
- Casper
- Cheyenne
- Cody
- Jackson Hole
- Lander
- Laramie
- Newcastle
- Riverton
- Rock Springs
- Sheridan

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Casper</td>
<td>11%</td>
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<tr>
<td>Cheyenne</td>
<td>23%</td>
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<tr>
<td>Cody</td>
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<tr>
<td>Jackson Hole</td>
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<td>Lander</td>
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<td>Laramie</td>
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<td>Rock Springs</td>
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<td>Sheridan</td>
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Totals:
- 57 firms in total.

The chart shows the distribution of firms by location as follows:
- Jackson Hole: 44%
- Cheyenne: 23%
- Casper: 11%
- Laramie: 7%
- Lander: 4%
- Newcastle: 2%
- Riverton: 2%
- Rock Springs: 4%
- Sheridan: 7%
Since our theme is affordability, let’s start with income

**Wyoming & Its Counties: 2014**

**HUD Median Income/Family**

The graph illustrates the HUD median income for families across various counties in Wyoming. The x-axis represents income in thousands of dollars, ranging from $0 to $300,000. The y-axis lists the counties, including Campbell, Sublette, Sweetwater, Uinta, Weston, Laramie, Converse, Albany, Carbon, Lincoln, Crook, Platte, Niobrara, Fremont, Hot Springs, Park, Big Horn, Johnson, Natrona, Washakie, Sheridan, Wyoming, Goshen, Crook, Platte, Niobrara, Fremont, Hot Springs, Park, Big Horn, Johnson, Natrona, Washakie, Sheridan, Wyoming. The data points indicate the median income for each county, showing variations in affordability across the state.
A narrow band of median & mean income for WY’s counties

Wyoming & Its Counties: 2014

IRS Mean Income/Return v. HUD Median Income/Family

HUD Median Income/Family
IRS Mean Income/Return

Income (000s)
Ditto the result when you divide mean into median

Wyoming & Its Counties: 2014

HUD Median Income/Family v. Mean/Median

IRS/HUD

0 0.5 1 1.5 2 2.5 3

Goshen
Crook
Platte
Niobrara
Fremont
Hot Springs
Park
Big Horn
Johnson
Natrona
Washakie
Sheridan
Wyoming

Lincoln
Carbon
Albany
Converse
Laramie
Weston
 Uinta
Sweetwater
Sublette
Campbell

IRS Mean/HUD Median (Y2)
HUD Median Income/Family (Y1)

Income (000s)

$0 $50 $100 $150 $200 $250 $300
Jackson Hole. Only an hour from Wyoming?

Wyoming & Its Counties: 2014

HUD Median Income/Family

$0 $50 $100 $150 $200 $250 $300

Teton

Income (000s)
Look at mean income, and vive la différence!

Wyoming & Its Counties: 2014

IRS Mean Income/Return v. HUD Median Income/Family

0 $50 $100 $150 $200 $250 $300

Income (000s)

- HUD Median Income/Family
- IRS Mean Income/Return

Wyoming & Its Counties: 2014
A YUGE la difference! America’s greatest income inequality

Wyoming & Its Counties: 2014

IRS Mean Income/Return v. HUD Median Income/Family

Wyoming & Its Counties: 2014

IRS Mean/HUD Median (Y2)
HUD Median Income/Family (Y1)
What’s going on? Wage income is similar...

Wyoming & Its Counties: 2014

Mean Income per IRS Tax Return, by Income Type

Wage income/return
...but not investment income
Housing prices sorta’ reflect median income

### Wyoming & Its Counties: 2014

Home Prices v. Median income

<table>
<thead>
<tr>
<th>County</th>
<th>Median Income (Y2)</th>
<th>Current Median SFH List Price (Y1)</th>
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- **$0** to **$300**
- **$300** to **$600**
- **$600** to **$900**
- **$900** to **$1,200**
- **$1,200** to **$1,500**

- **2016 HUD Median Family Income (Y2)**
- **Current Median SFH List Price (Y1)**
They really reflect mean income
Which raises the question: When you live in a state as disparate as Wyoming, what is affordable?

And if you don’t live in Teton County, is this really an issue?
Yes! We’re all Wyoming, with our collective financial wagon hitched to a rapidly-fading star.
Fading not just in production, but price
Which means cuts to everything: social services in coal counties; affordable housing in Teton

Wyoming General Fund, by Biennia: 2001-2018
Actual Appropriations 2001-2014; Estimated 2015-2018
34% drop
“Whenever I run into a problem I can’t solve, I always make it bigger. I can never solve it by trying to make it smaller, but if I make it big enough I can begin to see the outlines of a solution.”

– Dwight D. Eisenhower
Along with rapid growth and change and economic disparities, here’s another factor making all this more complicated: generational disparities

- Consider the three pillars of sustainability:
  - Economic capital
  - Human capital
  - Environmental capital
What’s the generational span of economic capital? For most building projects, let’s say 5 years
What about human capital? Let’s say the 20 years it takes between birth and being launched
Environmental capital? For the lodgepole pine forests around Jackson, it’s 100 years.
Which is 5 human generations...
...and 20 economic generations
Let’s make the problem bigger still. A political generation is two years
1 environmental generation = 5 human generations = 20 economic generations = 50 political generations.

- And since human nature tends to value the immediate and discount the future...
Point: Until we can better align the exigencies of an economic generation with those of human and environmental generations, politics will tend to trump economics, which will tend to trump human needs, which will tend to trump the environment.

95 Years since Teton County was established:

- 47.5 political generations
- 19 economic generations
- 4.8 human generations
- 0.95 environmental generations
Which makes being a designer even harder, for most of you likely got into the business because of an interest in human &/or environmental capital, not economic

- Which, along with your fashion sense, is pretty much the only real difference between you and investment bankers...
My Big Question
In the entire world, is there any community, region, or state that has developed an industrial or post-industrial economy without significantly damaging the ecosystem in which it lies?

- maybe Jackson Hole...
“The real problem of humanity is the following: we have Paleolithic emotions; medieval institutions; and God-like technology. And it is terrifically dangerous, and it is now approaching a point of crisis overall.”

The next 35 years are the most important in the history of humans’ interactions with the planet. We will learn to use resources far better, but will we do so in time to preserve most of Earth’s species and all of its basic ecosystems and their functions?
Q: Why does this matter to architecture?

A: Because the designed and built space is where humans spend most of their time.

- The materials within, and processes underlying, that space have a profound effect on how we interact with Earth, both today and in the future.
Thinking about the next 35 years (in the context of the past 250)...

Q: What can we do to achieve a state of “Co-thriving,” in which both human communities and the natural environments in which they lie simultaneously thrive?

● The alternative is to figure out how to deal in a world defined by Wilson’s apocalyptic view; i.e., without adequate resources, most species, and properly-functioning ecosystems.
Pre-Industrial Revolution, there was a rough balance between resource use and Earth’s replenishment abilities.
Wilson’s point: Since then, we’ve learned to use resources very inefficiently.

**Co-Thriving: Resources**
(A Rough Balance Between the Resources Humans Need to Thrive and Those Earth Can Produce During a Human Generation)

Start of Industrial Revolution

Resource Consumption as Practiced

Time

Resource Level
As practiced, “sustainability” is better than nothing, but...

**Co-Thriving: Resources**
(A Rough Balance Between the Resources Humans Need to Thrive and Those Earth Can Produce During a Human Generation)
To achieve co-thriving, we need to be regenerative.
With a focus on not just resources, but systems

**Co-Thriving: Systems**
(Resource Consumption Practiced so that Earth’s Fundamental Systems Continue to Function as They Have Evolved to Function)

- **Start of Industrial Revolution**
- **Regenerative Resource Consumption**
- **“Sustainable” Resource Consumption**
- **Consumption as Practiced**

**Time**
Business is the only economic force powerful enough to lead this effort
A long way to go in a short period...

Moving Toward Regenerative Business Practices:
Envisioning the Next 35 Years
...but actions are being taken
AEC Design Transparency: A New 501(c)6 non-profit

Vision

- Accelerate and broaden the global development of sustainable buildings and resilient communities by transforming AEC design performance data into publicly- and freely-available knowledge and insight.

Mission

- Develop an integrated, open-source platform that enables the aggregation, curation, publication, and search of trustworthy performance data for use by architects, engineers, builders, real estate developers and owners, product manufacturers, software developers, governments, NGOs, educational institutions, and consumers of all types.
AEC DT’s three foundational questions

- Do you care about the provenance of the materials you specify?
  - Should you care?

- If you care, what’s your process for determining that provenance?

- In that process, where do you go for your information? Can you trust that information?
The current situation

**DISCLOSURE**
Where does disclosed information come from?

**UNDERSTANDING**
How is it organized?
How is it accessed?

**GOOD DECISIONS**
How is it used to inform good decisions?

**RESEARCH + DISCOVERY**

**CURATION + AGGREGATION**

**APPLICATION + LEVERAGE**
The ideal future

**DISCLOSURE**
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**OPEN DATA FORMATS WITH PUBLIC INTERFACES**

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**RESEARCH + DISCOVERY**

**CURATION + AGGREGATION**

**APPLICATION + LEVERAGE**
AEC DT’s goal: Make it easier for everyone to do the right thing

- Why?
  - Because clients are demanding it
  - Because no firm has the resources to do it alone
  - Because the designed and built space is where humans spend most of their time.
    - The materials within, and processes underlying, that space have a profound effect on how we interact with Earth, both today and in the future

- DesignTransparency.org
In closing: a quick review

- Randomness in the moment; patterns overall
- Patterns affecting design in Wyoming
  - *Rapid, accelerating change*
    - Resource use outstripping resource production; reduced margin of error
  - *Wyoming is different economies linked by hydrocarbon dependence*
    - Affordability is in the wallet of the beholder
- Mis-alignment between different resource categories
- The need to co-thrive
  - *Sustainability isn’t enough*
  - *First steps being taken, including AEC DT*
In closing: what you might think about

- The importance of design
  - *Permanence and timelessness in an environment of accelerating change*

- 35 years to achieve co-thriving
  - 2050; one generation
  - *How might that affect your work? How might you affect it?*