



Texas A&M University  
Department of Construction Science



**Advancing with the employees you  
have now:**  
*Strategically coupling collective  
kaizen & standardization in IPD*

Zofia K. Rybkowski, PhD  
October 23, 2013

*In academia, we begin by asking:*

**What constitute lean principles and  
from where do they come?**

**LC at TAMU:**

Jose Solis,  
Zofia Rybkowski

**Lean Construction:**

Greg Howell, Lauri Koskela,  
Glenn Ballard, Will Lichtig...

James P. Womack,  
Jeffrey Liker

Eliyahu Goldratt

Taiichi Ohno

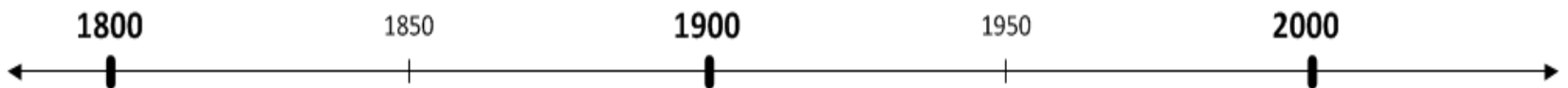
W. Edwards Deming

Lillian M. Gilbreth

Frank B. Gilbreth

Henry Ford

Frederick W. Taylor





- “The manager notices some particularly **successful man**, or method, or arrangement of tools, equipment or surroundings, and decides to have a **record made thereof that the success maybe repeated**. These records, if made in sufficient detail, are very valuable.” p. 398.
- “Perhaps one thing that makes the typical ‘Systems’ so attractive is the personal note that they contain. Illustrated with pictures of successful work that the workers themselves have done, often containing pictures of the men themselves that illustrate successful methods, with mention of the names of men who have offered valuable suggestions or inventions, **they make the worker feel his part in successful results.**” p. 399
- “**Standardization** conserves individual capacity by doing away with the wasteful process of trial and error of the individual workman. It develops individuality by **allowing the worker to concentrate his initiative on work that has not before been done**, and by providing incentive and reward for innovations.” p. 401-2

Excerpted from Gilbreth, L. (1914). *The Psychology of Management*, Sturgis and Walton Co., New York.





**Make a 7" long paper airplane  
in 3 minutes or less.  
The objective is to make it fly as  
far and as straight as you can.**

**Be sure to write your initials on the plane.**



**Now let's play!**

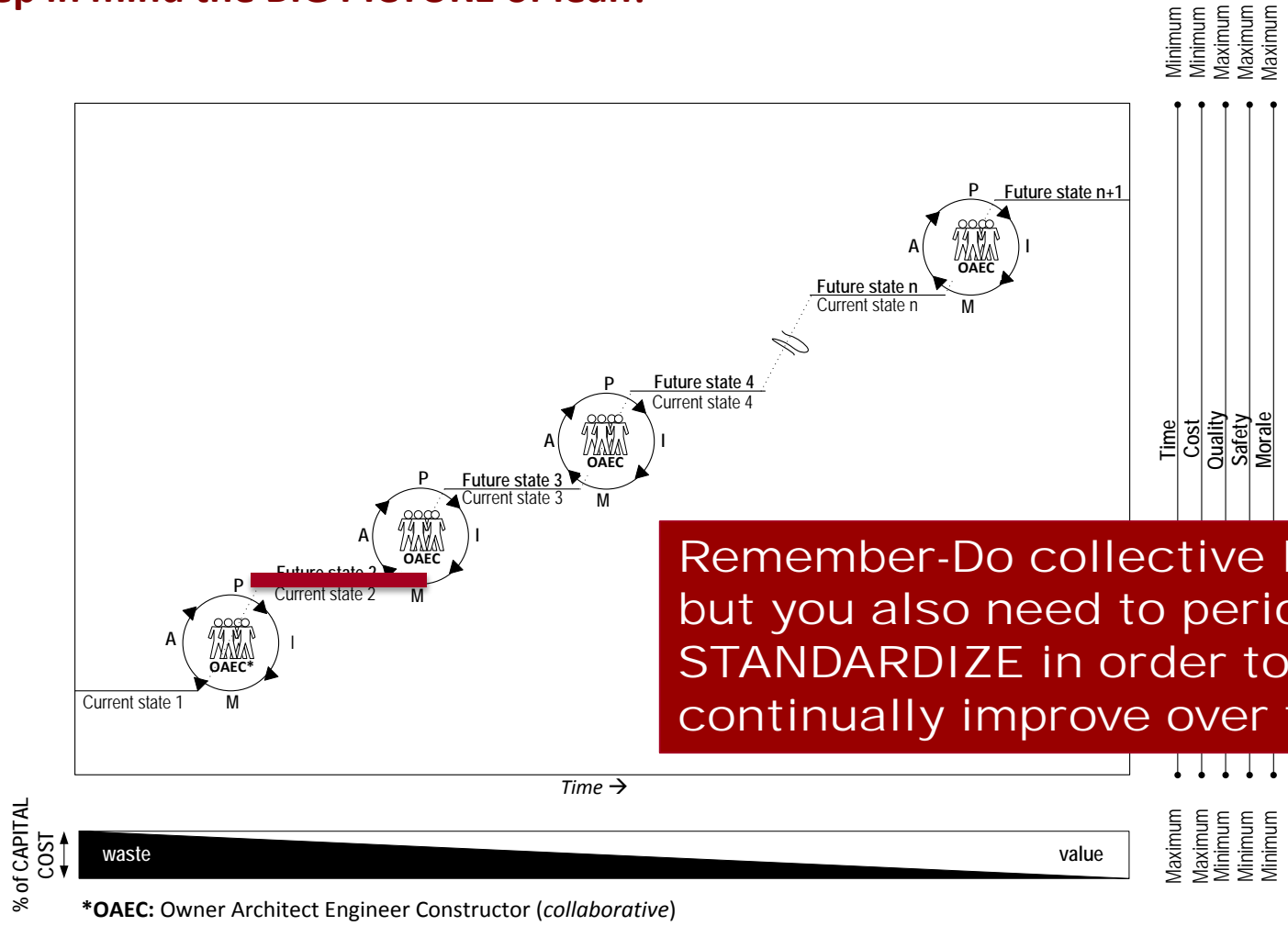


## ***Debrief:***

- **What “light bulb moments” did you have after playing the game?**
- **How might these lessons be applied to what you do everyday in the design office?**



# Keep in mind the BIG PICTURE of lean!



Remember-Do collective KAIZEN, but you also need to periodically STANDARDIZE in order to continually improve over time !

From Rybkowski, Z. K., Abdelhamid, T., and Forbes, L. (2013). "On the back of a cocktail napkin: An exploration of graphic definitions of lean construction," Proceedings of the 21<sup>th</sup> annual conference for the International Group for Lean Construction; July 31-August 2, 2013: Fortaleza, Brazil

For more information, please contact

## Zofia K. Rybkowski

Assistant Professor

*Department of Construction Science College of Architecture*

*Texas A&M University*

[zrybkowski@tamu.edu](mailto:zrybkowski@tamu.edu)

979-845-4354



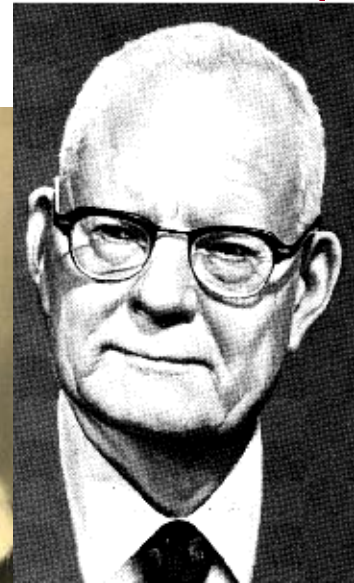




## ***You will need:***

- Facilitator & Participants
- Desk tops for participants to work on
- 7-inch piece of masking tape adhered on right side of each participant station *or* photocopy of a 7" ruler so participants can measure out 7-inches.
- Dry-erase marker and white board or flip chart
- 8 ½" x 11" pieces of scrap paper (about 10-15 per participant)
- "Eye of the tiger" DVD by rock group Survivor,  
or access to Youtube video of the song
- Stopwatch

## *Antecedent Contributors* to Lean Thinking



*Photo sources:*

**Frederick Taylor:** [http://en.wikipedia.org/wiki/Frederick\\_Winslow\\_Taylor](http://en.wikipedia.org/wiki/Frederick_Winslow_Taylor)

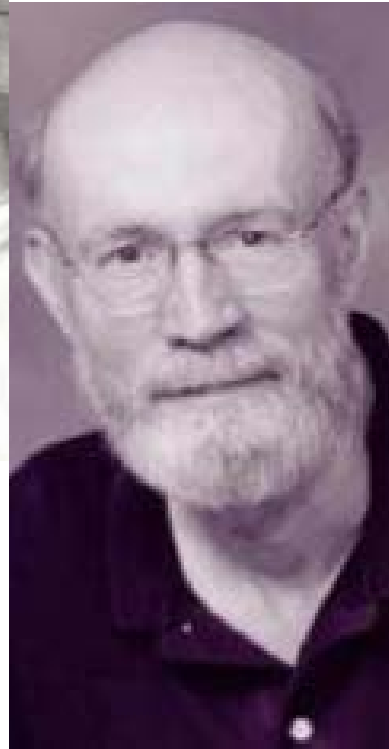
**Henry Ford:** <http://www.spartacus.schoolnet.co.uk/USAFord.htm>

**Frank B. Gilbreth:** <http://www.lib.purdue.edu/spcol/manuscripts/fblg/>

**Lillian M. Gilbreth:** [http://en.wikipedia.org/wiki/Lillian\\_Moller\\_Gilbreth](http://en.wikipedia.org/wiki/Lillian_Moller_Gilbreth)

**W. Edwards Deming:** [http://en.wikipedia.org/wiki/W.\\_Edwards\\_Deming](http://en.wikipedia.org/wiki/W._Edwards_Deming)

# Pioneers of Lean Manufacturing



*Photo sources:*

**Taiichi Ohno:** [http://www.gembapantarei.com/2012/03/masaaki\\_imai\\_remembers\\_taiichi\\_ohno.html](http://www.gembapantarei.com/2012/03/masaaki_imai_remembers_taiichi_ohno.html)

**Eliyahu M. Goldratt:** <http://alumniien.wordpress.com/2011/06/19/fallece-eliyahu-m-goldratt-autor-de-la-teoria-de-las-limitaciones/>

**James P. Womack:** <http://www.amazon.com/James-P.-Womack/e/B000APGWAM>

**Jeffrey Liker:** <http://www.strategy-business.com/article/08210?gko=60476>

# Pioneers of Lean Construction



Lean  
continues  
to adapt  
&  
transform

*Photo sources:*

**Lauri Koskela:** <http://www-edc.eng.cam.ac.uk/kim/people/laurie-koskela.html>

**Greg Howell:** <http://www.leanproject.com/who-we-are/people/gregory-a-howell-p-e-m-s-c-e/>

**Glenn Ballard:** <http://www.youtube.com/watch?v=dJyCpuR9xck>

**Will Lichtig:** <http://www.centralvalleybusinesstimes.com/stories/001/?ID=17475>