Engineering Leadership for Early Career Professionals

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An engineering manager reports that he has cut expenses by 15%. Good job?

In addition, he also angered the contractors and suppliers. Good job?

Another project manager delivered the project on time. Good job?

But to do so he put everybody on overtime and insulted and burned out his team. Good job?
Learning Objectives

Participants will be able to describe the evolution of leadership theory, distinguish between leadership and management; recognize leadership styles and when to use them; frame leadership within the engineering leadership model.
“Leaders” in 3 millennia of Western literature; But no “Leadership”

Boggs, 1990

Plato (300 BCE)

Hesse (20th Century)
Leadership (Webster’s)

1828 = 0
1933: (footnote) see -SHIP
1934 (2nd Edition): (footnote) see –SHIP

-SHIP: state, condition, quality (friendship); office;
(Chancellorship) art, skill (Horsemanship)

1961: The capacity to lead
Leadership ≠ “Taking the lead”

(unless you are a chimpanzee)
Great “Man” Theory
Leaders as Heroes
Trait Theory
Superior qualities of leaders

Intelligence
Self-Confidence
Charisma
Determination
Integrity
Sociability

5 Factors
Neuroticism
Extraversion
Openness
Agreeableness
Conscientiousness

Emotional Intelligence

“Short Guys Finish Last”
The Economist, December 23, 1995

“Why do we love tall men?”
Blink, Malcolm Gladwell, 2005
http://www.gladwell.com/blink/blink_excerpt2.html
Behavioral Theory

Leadership can be learned
Leadership Behaviors

Leadership is
Collaborating
Delivering success
Using **Influence**
Doing the right thing

Leadership is not
Controlling
Doing your best
Using power
Cutting corners

“Sometimes doing your best is not good enough. Sometimes you must do what is required.”

*Winston Churchill*
Leadership Process

• **Develop a vision**, goals, and path to accomplishment.

• **Influence others** to action through effective communication.

• **Achieve measurable success** while maintaining ethical excellence.
## Behaviors: Leadership ↔ Management

Leaders and managers relate to roles and subordinates differently

<table>
<thead>
<tr>
<th>Leadership</th>
<th>Management</th>
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</thead>
<tbody>
<tr>
<td><strong>Leadership activities can contribute to managing</strong></td>
<td><strong>Management functions can provide leadership</strong></td>
</tr>
<tr>
<td>Leaders facilitate interpersonal interaction and positive working relations.</td>
<td>Managers investigate, evaluate, supervise, negotiate, and represent.</td>
</tr>
<tr>
<td>Leaders, but not managers, generate excitement at work.</td>
<td>Managers plan, organize, staff, direct, and control work.</td>
</tr>
<tr>
<td>Leaders send out clear signals of their purpose and mission.</td>
<td>Managers tend to be more ambiguous or silent about their purpose.</td>
</tr>
<tr>
<td>Leaders behave as themselves.</td>
<td>Managers are more likely to see themselves playing a role.</td>
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</tbody>
</table>

Behaviors: Leadership ↔ Management

Leaders and managers relate to roles and subordinates differently.

“Any or all members can emerge as leaders, depending on how much of the functional roles they enact – the particular patterns of behavior they display in relation to the task of socio-emotional development and operation of the group.”
The nexus between leadership and management

Leadership

Develop a vision, goals, and path to accomplishment

Influence others to action through effective communication.

Achieve measurable results while maintaining ethical excellence.

Management

Systematically achieve established goals by organizing and directing physical and human resources.

“Leadership” is about seeing that a ladder is needed to accomplish a task and determining where it needs to go.

“Management” is about setting the ladder against the wall, getting the job done, and then putting the ladder away.
Engineering Leaderment?  
Engineering Manageship?

Schuhmann – Conceptual model (2010)
Leadership styles
Leadership styles

Human Nature
Fear, Anger, Joy, Sadness, Shame

Culture
Power Distance
Masculinity
Individualism
Uncertainty Avoidance

Personality
Introvert/Extrovert
Sensing/Intuition
Thinking/Feeling
Judging/Perceiving

Specific to individual
Inherited and Learned

Specific to group
Learned

Universal
Inherited

Hofstede, 2005
Leadership styles

- Behavior
- Appearance
- Language, Customs

Personality
- Thought Processes and Assumptions
- Norms
- Beliefs, Values, Expectations
- Cultural Dimensions
- Life Experiences
- Genetics
Situational Leadership

Task (Directive) Behavior

Low  |  High

Supporting – “Participating”
- High competence - variable commitment individual
- Experienced and capable
- Lacking confidence/motivation
- Able but unwilling

Coaching – “Selling”
- Some competence - low commitment individual
- Some relevant skills but needs help
- Task/situation may be new
- Unable but willing

Delegating
- High experience, competence, commitment individual
- Comfortable with ability
- Possibly more skilled than leader
- Able and willing or confident

Directing – “Telling”
- Low competence/commitment individual
- Lacking skills/experience
- Lacking confidence/motivation
- Unable and unwilling or insecure

Relationship (Supportive) Behavior

Low  |  High


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Leadership and Gender

While the public rates women as superior to men on a host of issues associated with leadership, like honesty and intelligence, a mere 6% say women make better leaders than men. About one-in-five (21%) say men make the better leaders, while the vast majority — 69% — say men and women make equally good leaders. **Men get higher marks on being leaders despite that fact that on seven of eight leadership traits measured, the public rates women either better than or equal to men.**

Mary Parker Follett (1920)
Real leadership arises from ability and not hierarchy. Creative conflict resolution. Proponent of employee empowerment, leveraging worker knowledge base, and using cross-functional organizational structure with horizontal management instead of top-down authority to facilitate knowledge-sharing.

http://www.pewresearch.org/daily-number/leadership-and-gender/
3-D Leadership Plot

- Transactional
- Autocratic
- Facilitative
- Participative
- Servant
- Free reign
- Decision empowerment
- Charismatic

Needs:
- Self-actualization
- Respect
- Belonging
- Security
- Physical

Style:
- Charismatic
- Facilitative
- Participative
- Servant
- Free reign
- Decision empowerment
- Charismatic

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Charisma

In a study of 100-year-old European corporations, leaders of the higher-performing companies were often not charismatic - and were, in fact, less likely to be charismatic than the leaders of the lower-performing companies.

The problem with charismatic leaders is that exceptional powers of persuasion make it easy for them to overcome resistance and opposition to their chosen course of action.

If your company is heading in the right direction, a charismatic leader will get you there faster. Unfortunately, if you’re heading in the wrong direction, charisma will also get you there faster.

Engineering Leadership Model

FIG. 2. Evolution in Skills for a Successful Engineer

Farr, 1997, Leadership Development for Engineering Managers
Questions?