# 2011 SAMSUNG ENGINEERING SUSTAINABILITY REPORT



### CEO MESSAGE



"Our sustainability is founded on the basis of transparency, respect for the people and environment and the growth of our partners. For us, it is our way of creating value for stakeholders."

# What is sustainable engineering for?

What is sustainable engineering for?

What are engineers for?

Normativities materialize as directionalities "[A] technical-social dualism lies at the heart of engineering expertise." Wendy Faulkner 2007







Its output was a "domesticated breed" that "convinced themselves that they served the interests of society as a whole ... [but] in reality served only the dominant class in society."

# An interdisciplinary arena of critical scholarship?

(... including critical participation)?

# Frustrations with STS . . .

Technology and Heterogeneous Engineering: The Case of Portuguese Expansion John Law

A Technological Nation 21 State Engineering before World War II State Institutions after World War II What Is a Technocrat? The Future of France The Mentality of the Future The Plan



# Frustrations with STS . . .

Tacit Networks, Heterogeneous Engineers, and Embodied Technology Author(s): Knut H. Sorensen and Nora Levold Source: Science, Technology, & Human Values, Vol. 17, No. 1 (Winter, 1992).

> While certainly the translation strategies employed by scientists have features in common with those applied by engineers, the discursive terrains where these translations are to be made are usually quite different



# But derivative inquiry . . .

Between social and cognitive Between science and technology Between labor and capital Between continuity and change Gender studies -what's specific about engineering?



## (2) Learning math. problem solving challenges students to divide the world into two parts

Engineering Selves: Hiring In to a Contested Field of Education Gary Lee Downey and Juan C. Lucena



1991-1997

Study of engineering knowledge necessarily linked to study of engineers' identities



# (4) PDS: Engineering as problem definition and solution

What is engineering studies for? Dominant practices and scalable scholarship

2004=>present KEYNOTE LECTURE ARE ENGINEERS LOSING CONTROL OF TECHNOLOGY From 'Problem Solving' to 'Problem Definition and Solution in Enginer

PDS: Engineering as Problem Definition and Solution

What are the normativities? What are the directionalities?



## **INES** Mission

to advance critical research and teaching in historical, social, cultural, political, philosophical, rhetorical, and organizational studies of engineers and engineering;

to help build and serve diverse communities of researchers interested in engineering studies;

to link scholarly work in engineering studies to broader discussions and debates about engineering education, research, practice, policy, and representation.











# Journal of Engineering Studies [China]









Technical-social phenomena lie at the heart of engineering expertise

--What are their normativities? --What are their directionalities?

# New image scaling up?

Valderrama et al.

"[W]idely recognized need for social responses to resource depletion, environmental deterioration and new energy technologies ."

"But this is not the first time engineering educators have attempted to bring social and environmental issues into the engineering curriculum.

# New image scaling up?

#### Petersen

"[Sustainability is] heterogeneous and contested set of perspectives that are continually defined and redefined throug social, cultural, and political practices..... [It] cannot be viewed as a finite goal or destination we can work towards as a global community.

#### Solli

"[C]onsulting engineers' opportunities to develop and provide sustainable services are shaped by a number of historic processes in the energy sector."



# Who is adding identities?

AccountAbility Setting the Standard for Corporate Responsibility and Sustainable Development Ment. The European Federation of Accountants (FEE), for example, states that: "materiality is a principle which is related to relevance and which is sometimes referred to as a 'threshold characteristic'.

stakeholders.

# Contested images? Solli "Navigating standards" can . . . have two different meanings, a) navigating between requirements and standards economic optimizing reflective swapping

b) navigating towards establishing new standards."





# Contested images?

Lucena

"Group dynamics put in place by participatory methods (e.g., a community meeting) might lead to participatory decisions that reinforce the interests of the already powerful . . . ."

# Who is adding identities?

**EPA Grant Number**: X3-83235101-0

Project Title: Benchmarking Sustainable Engineering Education Design for Environment Life Cycle Assessment Industrial Ecology Cultural and Social Dimensions



Table 3.2.	Extent to which D	ifferent System	is Sizes Are Add	ressed
Maximum values for	each system size (with	in 2 percent points	) are shaded to indicate	ate tendencies.

	Portion of Total Course Content						
System Size	Some*	None	Small (1-10%)	Moderate (10-50%)	Significant >50%		
Gate to Gate	27	19 (19%)	31 (32%)	38 (39%)	10 (10%)		
Cradle to Grave	15	26 (24%)	35 (32%)	37 (34%)	12 (11%)		
Inter-Industry Interactions (Industrial Symbiosis)	10	62 (54%)	25 (22%)	28 (24%)	0		
Extra-Industry	11	62 (54%)	33 (29%)	19 (17%)	0		
* Percentage of course content not specified by respondent, but topics within this system size selected							

# Contested images?

Valderrama et al.

"It may just cover a specific set of metrics, methods or technically preferred solutions

... include a broader perspective on how planning is performed in a more interactive and integrative fashion, or

... raise demands for engineers to be able to analyse societal challenges ....

# **Contested images?**

Klimek & Næss

"The interviewees were mainly educated as engineers and the majority was employed in industry as industrial scientists."

"Process engineer: 'I know some prototype engineers who say that [climate change] is nonsense, because there is no problem."

# Critical participation?

Petersen

"[Adding new competencies is] insufficient when it comes to enabling engineers to work with

sustainability at the more complex societal level." "reflective design practice"

#### Lucena

"Through collaborative faculty workshops . . . ."

Valderrama et al.

"[A] separate masters . . . sustainable energy planning and management.""



Valderrama et al.

"[What might be the case] when the sustainability challenge enters into both the core of technological knowledge and the priorities concerning future societal change?"





# What is sustainable engineering for?