

How to achieve gender diversity in ICT?

Vivian A. Lagesen, Norwegian University of Science
and Technology

- «Greater inclusion of women in the digital economy and increased diversity bring value, both social and economic»
(OECD report 2018, p. 5)

The Digital Gender Gap

- Economic concern – Annual productivity loss for the European economy is €16.2 billion (SMART 2016/0025)
- Scientific concern - reduces the pool to harvest talents from and makes for less innovative scientific outcomes (e.g, Nielsen et al. 2017)
- Social justice concern – legitimizes and supports the hierarchical relation between men and women in society (Fox et al. 2017, Sonnert and Holton 1995, Xie and Shauman 2003).

*"It is easier to put man on the moon
than to get women to enter computer
professions"*

(Wendy Hall, Former president of the British
Computer Society, in a workshop at the
Oxford Internet Institute in 2004)

Five lessons learned

1. Inclusion strategies should be based on inclusion thinking rather than exclusion thinking
2. Inclusion work best positive circles of inclusion are made
3. Quantity and quality are important inclusion instruments
4. Avoid gender stereotypes when designing inclusion strategies
5. Gender balance benefit men as well as women

Research data

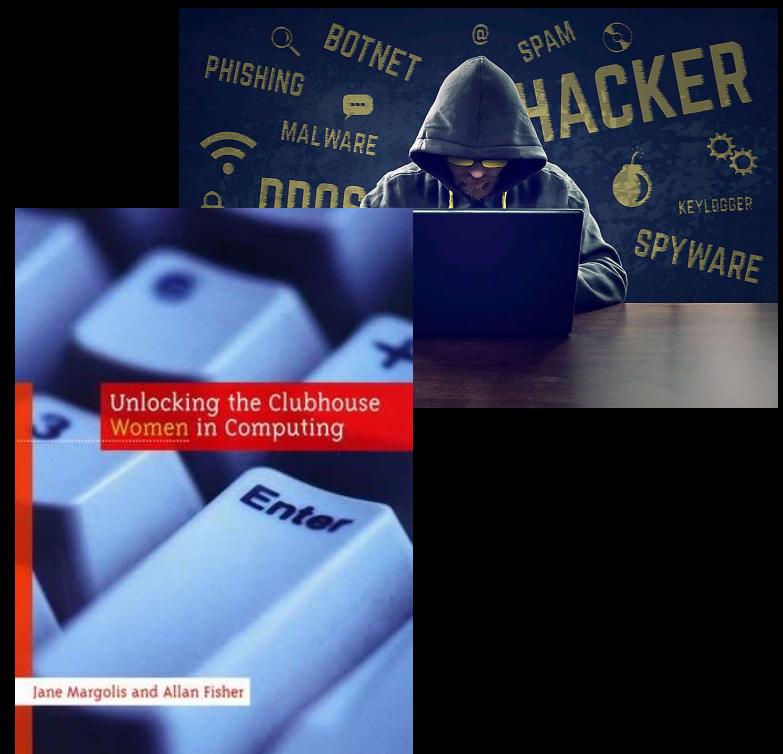
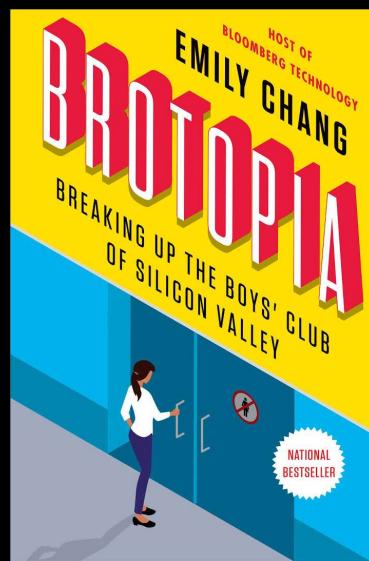
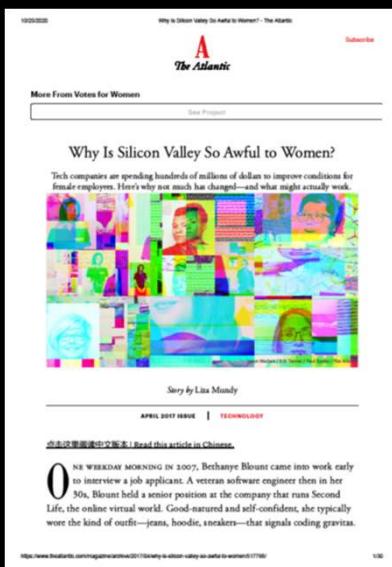
- EU study SIGIS (Strategies of inclusion: Gender in the information society)
 - 20 Researchers
 - 48 case studies about across five European countries: UK, the Netherlands, Ireland, Italy and Norway
- A comparative study of women informatics students and faculty in Norway and Malaysia
- A study of men and women in ICT companies in Silicon Valley, Malaysia and Norway
- Longitudinal study of inclusion initiatives at the Norwegian university of science and technology
- Comprehensive review of research literature

What are inclusion strategies?

Activities aimed to recruit people into, and /or retain and socialize them within some system

How may we best design for better inclusion?

Lesson #1 Inclusion strategies should be based on inclusion thinking rather than exclusion thinking



The anti-social male hacker

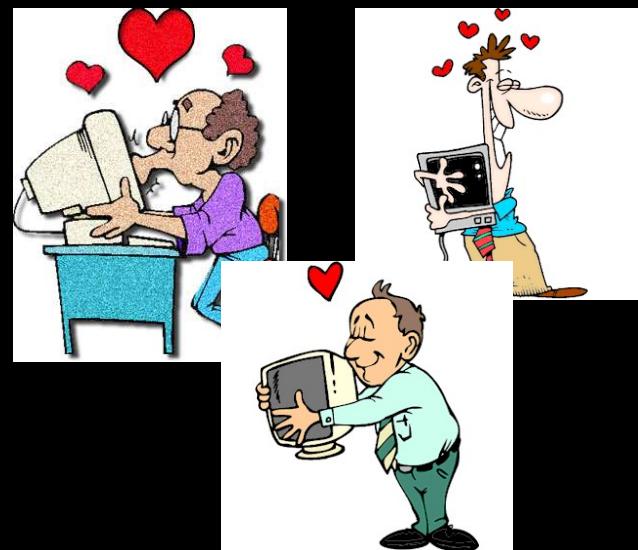
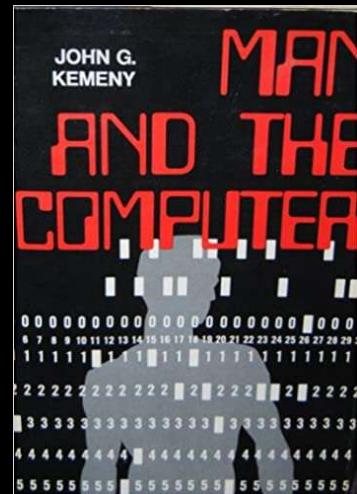
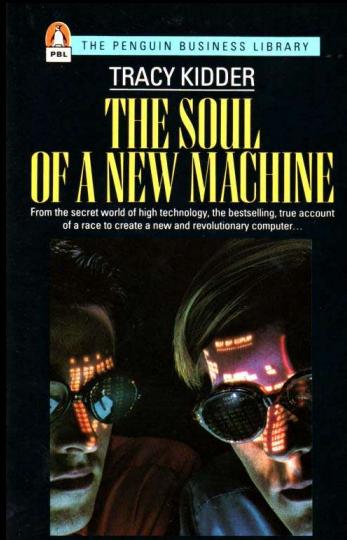
- “bright young men of disheveled appearance, often with sunken glowing eyes (...) their unwashed and unshaven faces, and their uncombed hair all testify that they are oblivious to their bodies and to the world in which they move (...)" (Weizenbaum, 1976 in Hannemyr 1999:1).

The narratives of women and ICT has been one of a negative circle of exclusion

- Inclusion = removing phenomena that produce exclusion; cultures, norms, ideologies, practices, symbols, interests, motivation, networks, etc..

Men and ICT – A narrative of inclusion

→ Positive circles of inclusion – **producing** cultures, norms, ideologies, practices, symbols, interests, motivation, networks, etc..



Lesson # 2: Inclusion require positive circles

What may we learn from the Malaysian case?



University of Malaya

- All Heads of Departments were women
- The Dean was a woman
- (Source: Othman and Latih 2006, March 2006/Vol. 49, No. 3, COMMUNICATIONS OF THE ACM)



Session	B. CS				B. IT			
	Female		Male		Female		Male	
Session	Number	%	Number	%	Number	%	Number	%
2005/2006	61	45	74	55	41	71	17	29
2004/2005	96	48	105	52	82	71	34	29
2003/2004	86	59	60	41	82	56	65	44
2002/2003	169	62	104	38	100	55	82	45
2001/2002	167	52	156	48	130	67	64	33
2000/2001	246	55	201	45	197	69	89	31
1999/2000	127	46	147	54	88	59	60	41
1998/1999	144	51	137	49	107	61	67	39

What was it that attracted women to CS in Malaysia?

Enthusiasm

V: So, why did you choose to study computer science?

Salina: Because I'm very interested, actually since I was in sixth grade, I used to sit and tell my mum: 'I am going to be a system analyst or I'm going to be someone who is an expert in computers'.

(Salina, master student, University of Malaya)

Instrumental interest (job prospects)

*“Also, I think this is a very good subject,
a very wide range. After I finished this course,
I’m sure that I can get something. I mean,
it’s a job for me...”*

(Maimunuah, bachelor student)

Parental encouragement

"Actually, computer science is not my main interest, it's my dad's main interest, you see (laughing). Actually, I was very, interested in chemical engineering. But then (...) my dad kind of talked me out of it (...). So, my dad kind of ... should I say 'brainwashed', talked me into it, saying that this is computer era, whatever ... So, okay, since it is a new thing, why not give it a try?"

(Wanda , first year student)

Governmental encouragement

It is because of my father's advice. Because during that time period it was, that was in early in 1990s, when the government start to urge Malaysian people to study IT. And that's what made my father advised me to do so, choose this field, especially IT. So I just follow this advice, and I am quite satisfied in this field. I want to be a professional in computing, on IT and computer related fields.

(Supryia, master student)

Computer science – a women-friendly subject and career

Maimunah: You can say that computer science ... this computer science course is meant to be for women instead of guys. I mean, guys usually go for engineering, architecture, contractors, that kind of jobs.

V: Why?

Azizah: Out. Because it is out, not in the office, they're doing outside.

Maimunah: They get exposed a lot.

Azizah: Exposed, yeah. More dangerous.

Maimunah: Except for us, for girls, they expect us to stay in the office, to do that kind of work.

(Maimunah and Azizah, bachelor students)

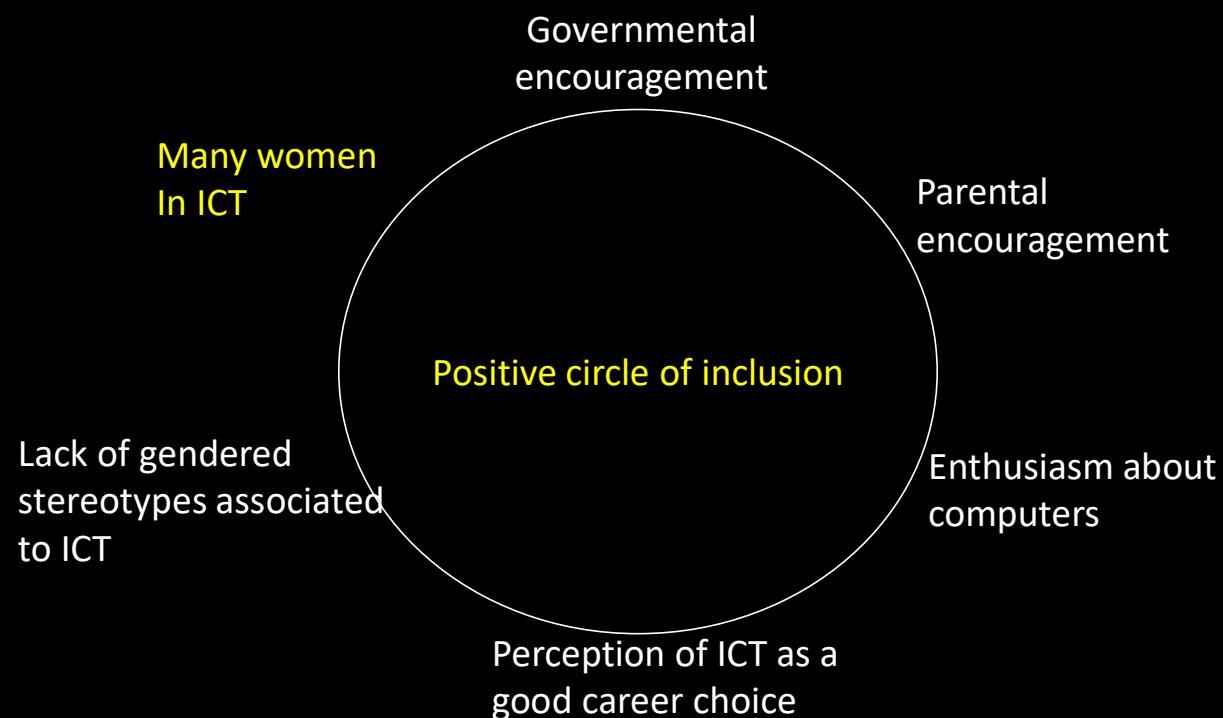
«Mum use computer for fun, Dad just use it if he needs to»

The funny thing about the computer is, that me and my mother we will race to the computer and we play games. Because she is in her fifties you see, so you know, women in this age they can ... hardly get sleep, you see. So, sometimes she will sit up at night just to play computer games.

My dad likes playing golf, you see, he likes outdoor-activities. While my mum is a really an in-door person. (...) She prefer something in-door, like making cakes, baking, computers ... all those in -door stuff.

(Wanda, bachelor student in CS)

The positive circle of inclusion of women to ICT in Malaysia



Gender balance produce different (and better) cultures and less gender stereotypes

- The high proportion of women made computer science become constructed as a discipline well suited for women,
 - Computer science was perceived as a women-friendly space
 - Lack of notions of hackers or geeks
 - Thus, it became attractive for both men and women



How to make positive circles?

Two successful projects:

- Carnegie Mellon University (Margolis and Fisher 2002, Frieze and Quenesberry 2015)
- Norwegian University of Science and Technology (Lagesen 2007, 2011, 2019)
- SIGIS project: Initiatives should meet as many as possible of three inclusion needs (Sørensen et al. 2011)
 - Access
 - Motivation
 - Capability/empowerment

Access

- Hawthorne-effect (increased awareness and attention)
- Changing admission criteria
- A quota for women
 - Creating a peer-supportive and non-marginalised community among women
 - The gender mix created a better culture
 - Influence the symbolic interpretation of computer science to make it more ‘transgender’

Motivation/Capability/ Empowerment

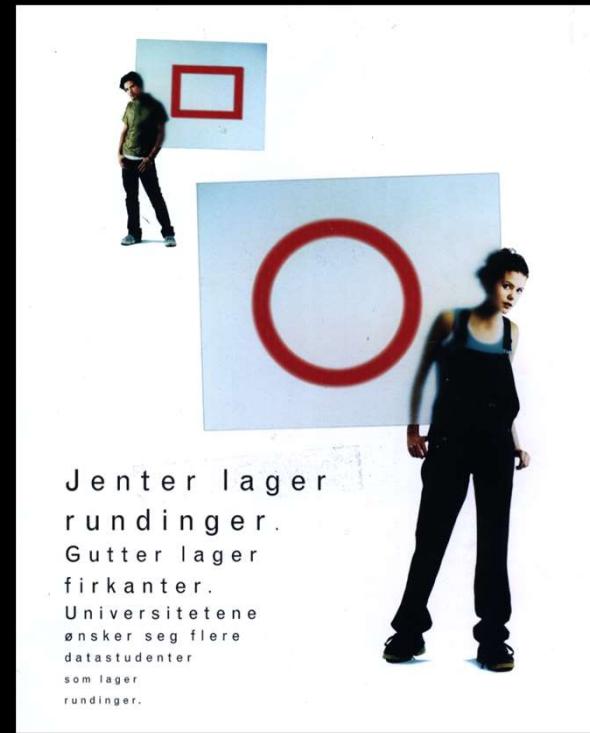
- Increasing the quality of the teaching
- Courses tailored toward a more diverse student population.
- Introductory courses and hands-on workshops

Lesson #3: Quantity and Quality are important inclusion instruments

- Quantity
 - Numbers are at the very heart of the way inclusion initiatives may work
 - Gender balance benefits both men and women
- Quality
 - improving quality is a point of departure or developing inclusion strategies (e.g., computer games)
 - Improving quality is likely to benefit everyone, but especially those who belong to a minority or are on the margins

Lesson #4: Avoid gender stereotypes

«Women make circles and men make squares. The universities wants more computer science students that makes circles.»



Jenter lager
rundinger.
Gutter lager
firkanter.
Universitetene
ønsker seg flere
datastudenter
som lager
rundinger.

Who do you think
will get the job of
making a system
that makes
everyday life
easier for patients
and doctors?



Hvem tror du får jobben med å lage et system som gjør hverdagen lettere for både pasienter og leger?



Why avoid gender stereotyping

- Because it does not work well
- For political and long-term reasons: it contributes to conserve gender binaries rather than transgressing them
- Better alternatives: target specific sub-groups of women
- Knowledge is an important anti-dote to stereotyping

Lessons learned

1. Inclusion strategies should be designed on the basis of inclusion thinking rather than exclusion thinking
2. The most efficient inclusion strategies are those that manage to make positive circles
3. Avoid using gender stereotypes when designing inclusion strategies
4. Quantity and quality are important inclusion instruments
5. Inclusion measures benefit everyone

Sources

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