



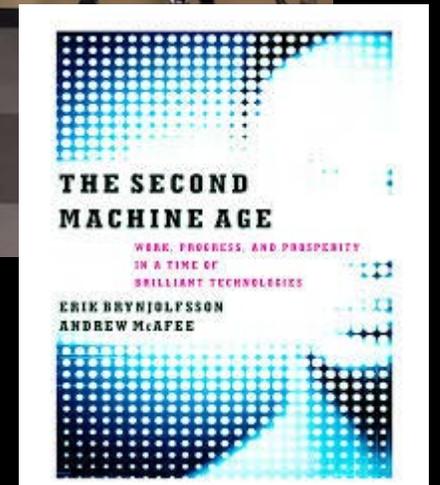
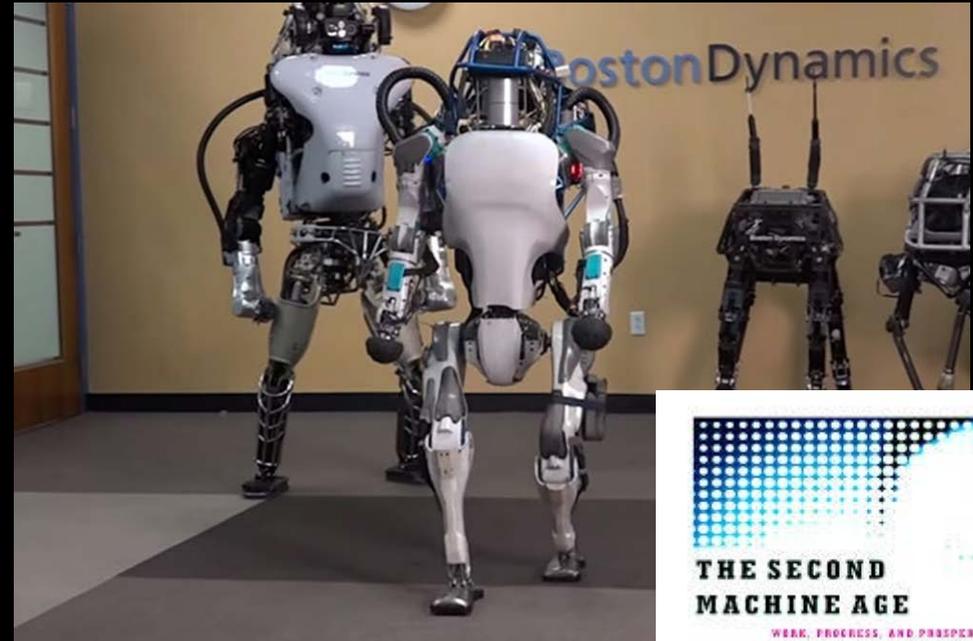
expanding digital opportunity?
'digital inclusion' and the *'ordinary'* city

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the meta-question...

Will the 'digital economy' more deeply entrench 'digital divides' or - with **intentional intervention** - are more '*inclusive innovation*' pathways possible?

"The exact nature of the change will be **determined by** the social, **political**, and business **choices** that we make" (Kenney & Zysman, 2016)



economic opportunity & the 'digital divide': 3 analytical entry points & 3 research questions

1. spatial: mid-sized, 'ordinary' cities outside 'digital corridors'

(Wolfe & Bramwell, 2008, 2016; Clarke & Gaile, 1998; Kodrzycki & Munoz, 2014; Erickcek & McKinney, 2006; Kotkin, 2003; Bell & Jayne, 2006; Markusen et al, 2008)

2. socio-technical: digital inequality & work

(Lowe, 2008; Chapple, 2006; OECD, 2017; Kauffman, 2016, OECD, 2017; Wolfe-Powers, 2017)

3. institutional: policy & local governance

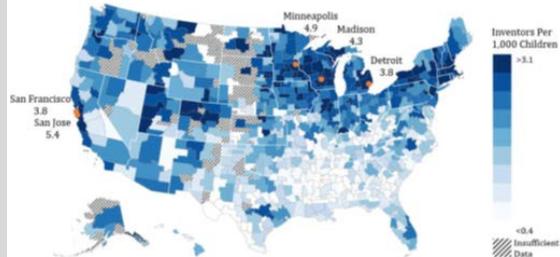
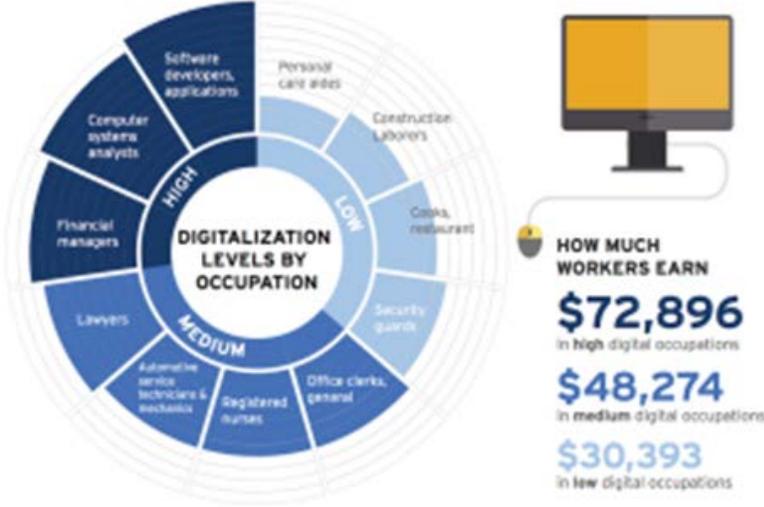
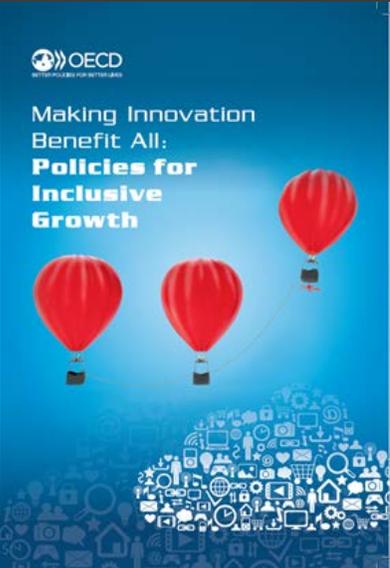
(Bradford & Bramwell, 2014; Benner & Pastor, 2015; Savitch & Kantor, 2002; Rodriguez-Pose, 2013; Gertler, 2013; Harrison & Glasmeier, 1997)

1. Creating digital opportunity? (tech-based innovation or conventional attraction strategies?)

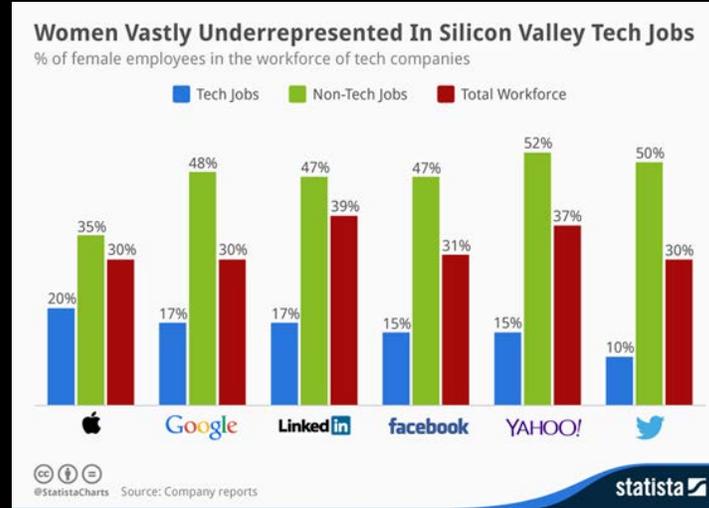
2. Expanding digital opportunity? (inclusive development from within or talent attraction from elsewhere?)

3. Governing digital opportunity? (leverage policy & coordinate local efforts or fragmentation & competition?)

but all of a sudden, it became policy relevant...



| Occupation group | Percentage point over or under representation compared with share of total workforce | | | | | |
|--|--|-------------|-------------|-------------|------------|-------------|
| | Worse | men | White | Black | Asian | Latino |
| Computer and Mathematical | -23.3 | 24.3 | 4.3 | -4 | 19.2 | -9.9 |
| Architecture and Engineering | -22.4 | 22.8 | 8.7 | -6.3 | 5.5 | -19 |
| Management | -12 | 17 | 8.8 | -4.4 | 8 | -8.8 |
| Business and Financial Operations | -7.9 | 19 | 7.4 | -2.2 | 17 | -9.9 |
| Arts, Design, Entertainment, Sports, and Media | 17 | -17 | 5 | -5.3 | 0.6 | -41 |
| Life, Physical, and Social Science | -2.8 | 2.8 | 4.1 | -8.9 | 9.9 | -8.5 |
| Legal | 5 | -5 | 29.8 | -5.6 | -2 | -8.3 |
| Office and Administrative Support | 25.7 | -25.3 | 0.3 | 2.2 | -1.4 | -11 |
| Health Care Practitioners and Technical | 28.8 | -28.8 | 5.5 | 0.1 | 3.5 | -8.9 |
| Education, Training, and Library | 26.3 | -26.1 | 3.9 | -1.8 | 1.4 | -8.7 |
| Community and Social Service | 18.7 | -18.7 | 0.8 | 6.7 | 2.7 | -4.4 |
| Protective Service | -14.1 | 14.5 | -1.9 | 11 | -3.3 | -2.6 |
| Installation, Maintenance, and Repair | 14.2 | -14.2 | 3.7 | -17 | 2.9 | 2.3 |
| Sales and Related | 2.2 | -2.2 | 2.3 | -1.9 | 0.4 | 1 |
| Health Care Support | 10.9 | -10.9 | 1.9 | 15.4 | 0.6 | 0.2 |
| Production | 16.6 | -16.6 | 6.4 | 1 | 0.2 | 5.6 |
| Transportation and Material Moving | 10.3 | -10.3 | -9.6 | 6.5 | 2.3 | 5.4 |
| Construction and Extraction | 11.0 | -11.0 | 7.8 | 5.7 | 8.4 | 11.3 |
| Road, Transportation and Service Related | 6.7 | -6.7 | -8.1 | 1.9 | -0.5 | 9.1 |
| Personal Care and Service | 10.8 | -10.8 | -6.8 | 4 | 3.2 | -5.4 |
| Training, Teaching, and Preschool | -14.9 | 14.9 | 17 | -17 | -4.3 | 18.3 |
| Building and Grounds Cleaning and Maintenance | -8.7 | 8.7 | 2.1 | 2.7 | -3.2 | 3.1 |
| Percentage share in total employment | 44.8 | 53.2 | 45.3 | 15.9 | 4.1 | 16.7 |
| Average dollar scores | 88 | 45 | 48 | 4.6 | 31 | 40 |



and overtly political (!) ...

and in unexpected ways ...

Experts “envison a future in which robots and digital agents [will] have displaced significant numbers of both blue- and white-collar workers – with many expressing concern that this will lead to vast increases in income inequality, masses of people who are effectively unemployable, and *breakdowns in the social order*” (Pew, 2018)

“Supporters of dynamism and diversity increasingly [*clash*] with proponents of stability and homogeneity, beneficiaries of technological change [*clash*] with those harmed by the resulting economic shifts.” (Galston, Brookings, 2018)

“People should prepare for *large scale disruption*” (West, Brookings, 2018)



upshot?

expanding
opportunity in the
digital economy
matters ... a lot.



WE Can't

SURVIVE

so...we need to know a lot more about the people & places – and people IN places - on the wrong side of the digital divide



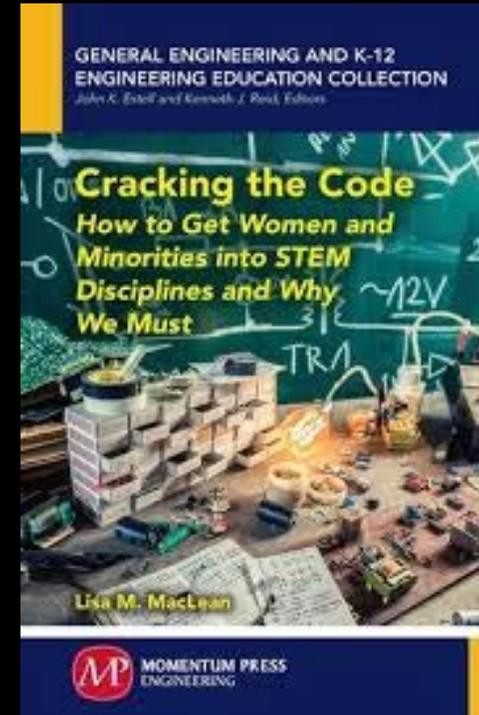
expanding digital opportunity... what is 'inclusive innovation' anyway?

the short answer...



I'm working on it!

the working answer...



how I'm approaching it?

(beyond STEM & big cities)

places: the 'ordinary' city

- outside 'digital corridors'
- restructuring
- mid-sized
- out-migration
- research university

people: 'digital inclusion'

1. **workforce development** (Lowe 2008)

- digital literacy & skills
- smart manufacturing (3D, robotics)
- career pathways into digital & related

2. **entrepreneurial ecosystems** (Bell et al.; ICIC)

- tech-based vs. untraded
- under-represented groups

3. **makerspaces/hackerspaces** (Wolfe-Powers)

- use of digital technologies (3D printers)
- design/production interface
- prototyping for start-ups

'top-down' policy or 'bottom-up' local capacity? comparing 'digital inclusion' in 4 'ordinary' cities

research questions

1. expanding digital opportunity from within or talent attraction from elsewhere?
2. what are key drivers of/barriers to digital inclusion?
3. what is the role of public policy?
4. what is the role of local institutions?

methodology

- **market-led, grassroots** (Greensboro, NC, US)
- **state-led** (Saint Etienne, France)
- **'hybrid' policy/nonprofits** (London, ON, Canada)
- **multilevel network governance** (Tilburg, Netherlands)

Greensboro, NC: grassroots initiatives

1. workforce development

- traditional manufacturing focus – little digital
- aviation career pathways - some digital
- cyber-security & design - no PSEs, or 'equity'
- lost Toyota-Mazda partly due to weak WFD systems in smart manufacturing (!)

2. entrepreneurial ecosystems

- ecosystem competes for viable entrepreneurs, seed capital
- weak linkages with JSNN & NCAT (little academic entrepreneurship)
- **InnovateGSO** – inclusive entrepreneurship but conflates tech-based and untraded; passive web tool

3. makerspaces/hackerspaces

- more tinkering than inventing
- weak funding, few women and people of color



London: 'hybrid' policy/local mix

1. workforce development

- progressive WFD system (LEDC) but little digital programs
- downtown college campus co-located with digital firms but not a major pipeline (yet?)
- BUT unequal access in schools (neighborhood effects)

2. entrepreneurial ecosystems

- 300 + creative digital firms BUT can't recruit locally
- ONE funding shift to tech-based

3. maker/hacker/coworking space

- unLondon & Hacker Studios with equity intentions...
- BUT non-profits & grassroots, constantly fundraising



Saint Etienne: metropolitan government led

1. workforce development

- not major part of the policy conversation
- very small **pilot prg for unemployed youth** at engineering school

2. entrepreneurial ecosystem

- focused on digital service provider start-ups
- unemployed eligible but a small part of prg

3. maker spaces?

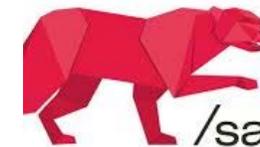
- centre for 'design thinking' co-located with design school
- 'workshop' for digital start-ups but no inclusion focus

Cité
du
design



Ouverture
Filière
Data
Engineering

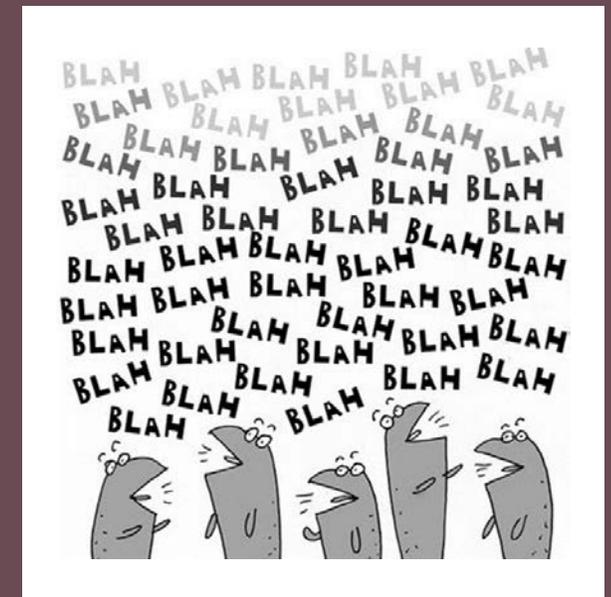
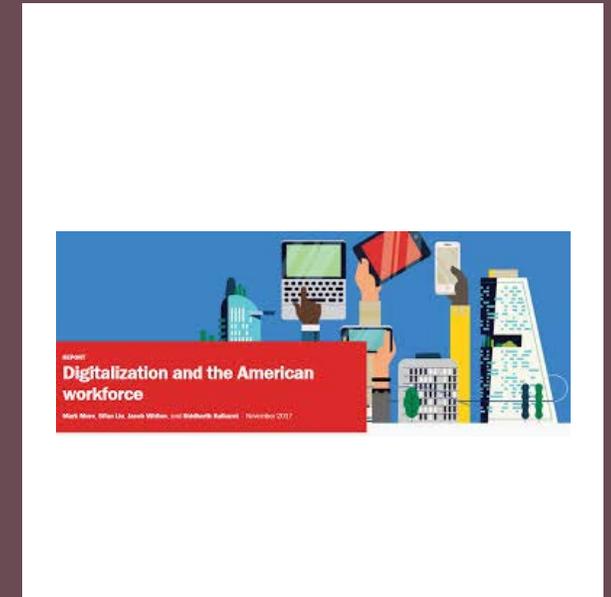
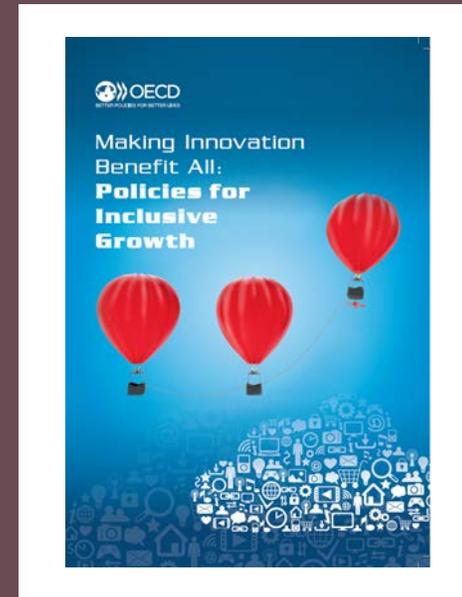
DIGITAL
LEAGUE



/saintétienne
#ATELIER NUMERIQUE /

| | GREENSBORO (market-led, grassroots) | LONDON (hybrid policy & grassroots) | SAINT ETIENNE (government led) | TILBURG (multilevel network governance) |
|---|--|--|---|--|
| workforce development/ career pathways | sector strategies but not 'digital'; cyber-security private sector led; Nanobus but PhDs in nano | 'digital' pathways but not major pipeline; recruit talent from outside | <i>small pilot for low-income/immigrant students to engineering</i> | |
| entrepreneurial ecosystems | <i>intentional inclusion but weak links with tech start-ups</i> | O.N.E. funding shift to tech/student entrepreneurs | unemployed workers eligible for support for digital & web-based start-ups | |
| maker/hacker/co-working 'spaces' | 3D printers for fun rather than for profit | cool stuff...but not scaling outward | inclusion through urban design; hackerspace focused on start-ups | |
| 'DIGITAL INCLUSION?' | some but minimal & patchy | some but minimal & patchy | some but minimal & patchy | TBD |

'digital inclusion' in theory?



digital inclusion in *practice*?

policy gaps & weak local capacity

1. expanding digital opportunity from within or talent attraction from elsewhere?  evident in all 3 places & all 3 areas BUT limited, patchy, and incidental
2. what are key drivers/barriers to digital inclusion?  'weak market' – jobs & growth trump inclusion
3. what is the role of public policy?  policy involvement varies by program area & context BUT *no dedicated policies*
4. what is the role of local institutions?  mainly local & grassroots (in US!) BUT precarious, weak coordination, & at fringes of development agenda

key takeaways?

'ordinary' cities share similar 'weak market' challenges SO **size and specialization predict more than policy context**



NEED PLACE-BASED POLICIES THAT ACKNOWLEDGE DISTINCT CHALLENGES FOR MID-SIZED CITIES

the technology curve is lapping the policy curve causing **trade-offs between digital innovation & inclusion**



INNOVATION POLICY REQUIRES ATTENTION TO BOTH!

Tilburg?

