



Men and machines: a different perspective on the digital revolution

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Francesco Rullani, Enzo Rullani (2018), Dentro la rivoluzione digitale. Per una nuova cultura dell'impresa e del management, Giappichelli, Torino.

Two perspectives

The **techno-pessimist view** The **techno-optimistic view**

- *Today Machines are tools, and Man uses them* $=$ *Today Machines are tools, and Man uses them*
- *Tomorrow Machines will evolve, and leave increasingly less room for Man (in life as well as on job)* \neq *Tomorrow Machines will evolve, increasing Man's opportunities to grow (improving life and jobs)*



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A third perspective: the hammer

- machines' influence on man was powerful since Ind. Rev.
- machines need '**low-complexity**' inputs and outputs
- '**de-complexification**' transferred to:
 - workers (Taylorism)
 - organizations (Fordism)
 - society (Dichotomies)
- dependence on machines **expelled complexity**
 - relegated in local systems, communities, ...



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A third perspective: the hammer

- machines (their principles) **DID leave small room** for humans, but we did not see it
- we thought we simply *used* them. We were/are indeed **shaped** by them.



"if all you have is a hammer...

... everything looks like a nail"



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A third perspective: the digital

- When Machines can manage higher levels of complexity,
«de-complexifying» becomes useless
- The **Machine now adapts to Man**, and not vice versa.
- This **frees** time, resources and energies. *To do what?*
 - Something Machines **can't do**
 - Something that creates **value**



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A third perspective: the digital

Create value as **only Man** can do:

Frey & Osborne (2017):

- dexterity → just matter of time!
- **creativity** → low substitution (Boden, 2016)
- **social intelligence** → structurally human!

*“Creativity is a fundamental feature of human intelligence, and a challenge for AI. AI techniques can be used to create new ideas ... : by producing **novel combinations** ... ; by **exploring** ... conceptual spaces; and by making **transformations** that ... generate ... impossible ideas.*

AI will have less difficulty in ... generation of new ideas than in automating their evaluation” (Boden, 1998).

→ Here is where **value** creation happens, as all the rest – made by Machines – becomes a **commodity**



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A

Man and Machines can complement each other

Cri (*cobots, artificial companion, augmented intelligence*)

Collaborative Intelligence: Humans and AI Are Joining Forces

by H. James Wilson and Paul R. Daugherty

FROM THE JULY-AUGUST 2018 ISSUE

Harvard
Business
Review

In our research involving

1,500 companies, we found that firms achieve the most significant performance improvements when humans and machines work together. Through such collaborative intelligence, humans and AI actively enhance each other's complementary strengths: the leadership, teamwork, creativity, and social skills of the former, and the speed, scalability, and quantitative capabilities of the latter. What comes naturally to people (making a joke, for example) can be tricky for machines, and what's straightforward for machines (analyzing gigabytes of data) remains virtually impossible for humans. Business requires both kinds of capabilities.



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But will the new Digital Society
be compatible with this vision?

*... in every aspect (value creation,
labour, consumption, markets,
education)?*



But will the new Digital Society
be compatible with this vision?

VALUE CREATION



- Two drivers of value:

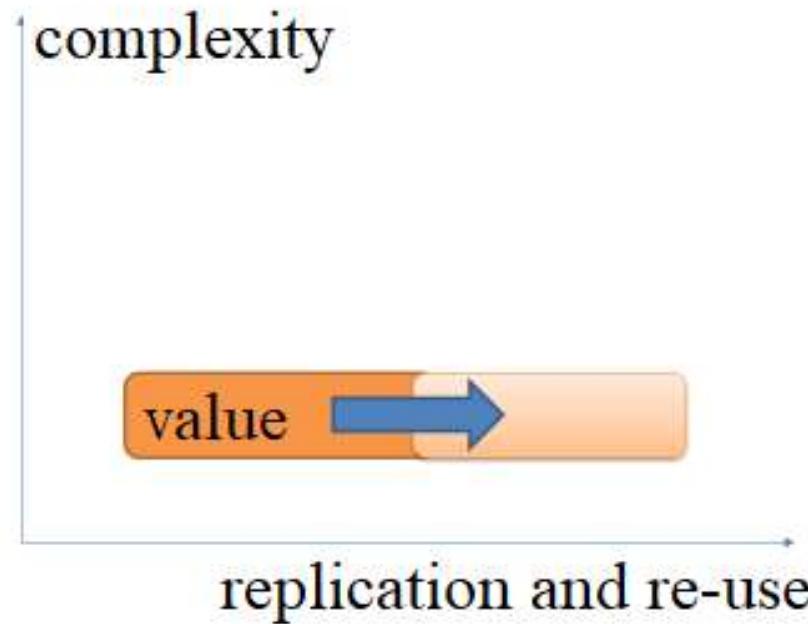
- *Re-use of standardized knowledge*
 - *Multipliers due to ideas replication and transfer*
- *Exploration of complexity*
 - *Standard → codified variance → non-codifiable variance*

complexity

value

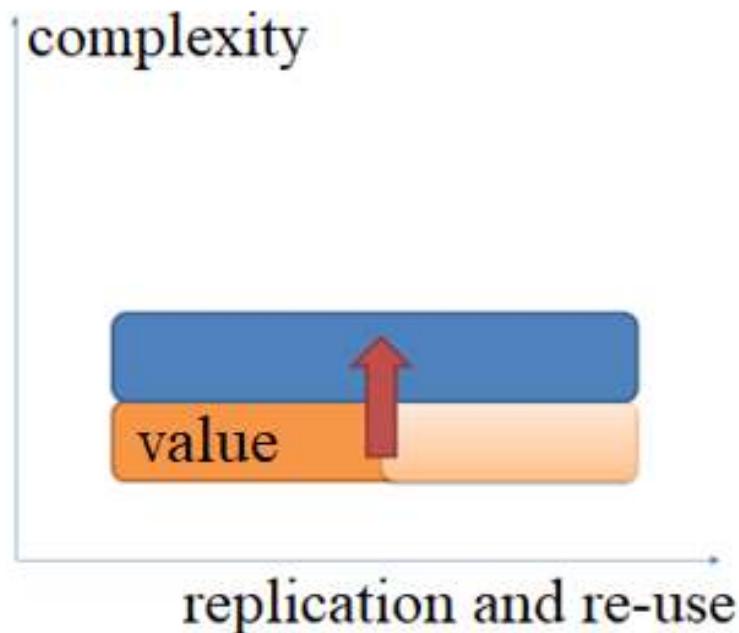
replication and re-use

- digitalization impacts value production via 3 factors:
 - 1) Dematerialization
(replication of standards)

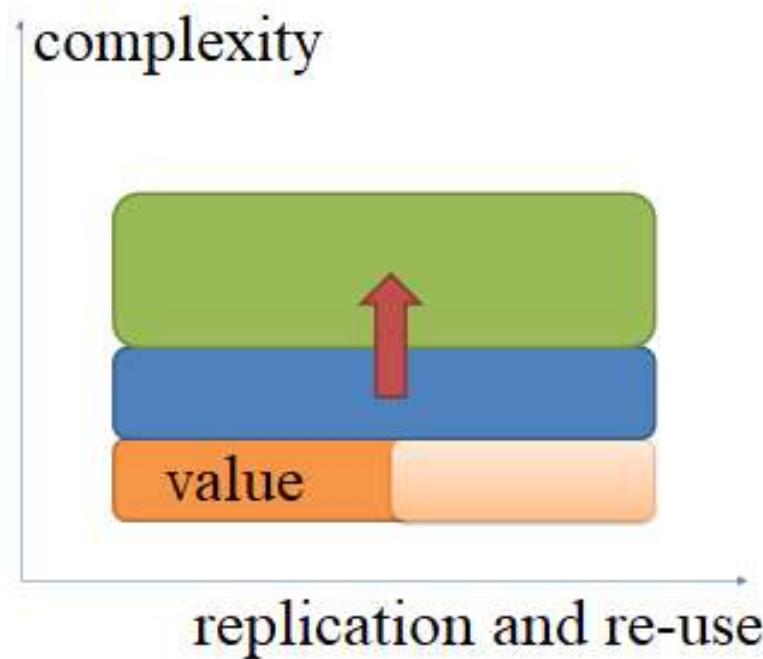




- digitalization impacts value production via 3 factors:
 - **1) Dematerialization**
(replication of standards)
 - **2) Learning Machines**
*(complication: ↑codified variance
→ customization & flexibility)*



- digitalization impacts value production via 3 factors:



- **1) Dematerialization**

(*replication of standards*)

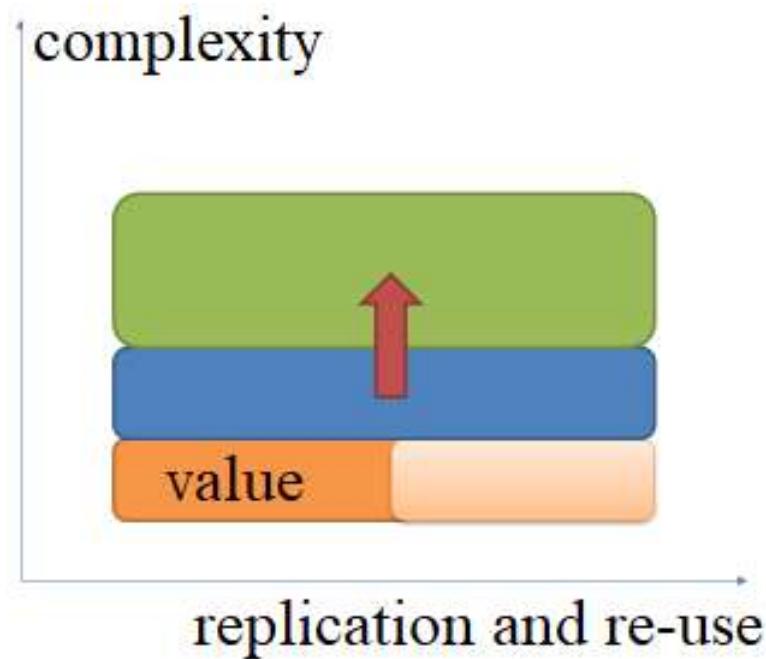
- **2) Learning Machines**

(*complication: ↑ codified variance*)

→ *customization & flexibility*)

surplus

- digitalization impacts value production via 3 factors:



- 1) Dematerialization
(*replication of standards*)
- 2) Learning Machines
(*complication: ↑ codified variance*
→ customization & flexibility)
- 3) Enabling intelligence
(*exploration of non-codifiable variance & sensemaking*)

surplus

Digitalization and Value Creation: Investing the surplus is key!

- Machines **adapts** to Man → **frees** time and resources
 - It is possible to **enable human-specific value creation** processes based on creativity and social intelligence
 - **BUT** the system does not necessarily tend to this state
 - **THUS surplus must be actively reinvested** to activate these mechanisms.
 - Such investment must be:
 - *orchestrated*
 - *imagined*
 - *foundaed*
 - *Put in place*
- } *Politics, Social bodies & Communities*



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LABOUR



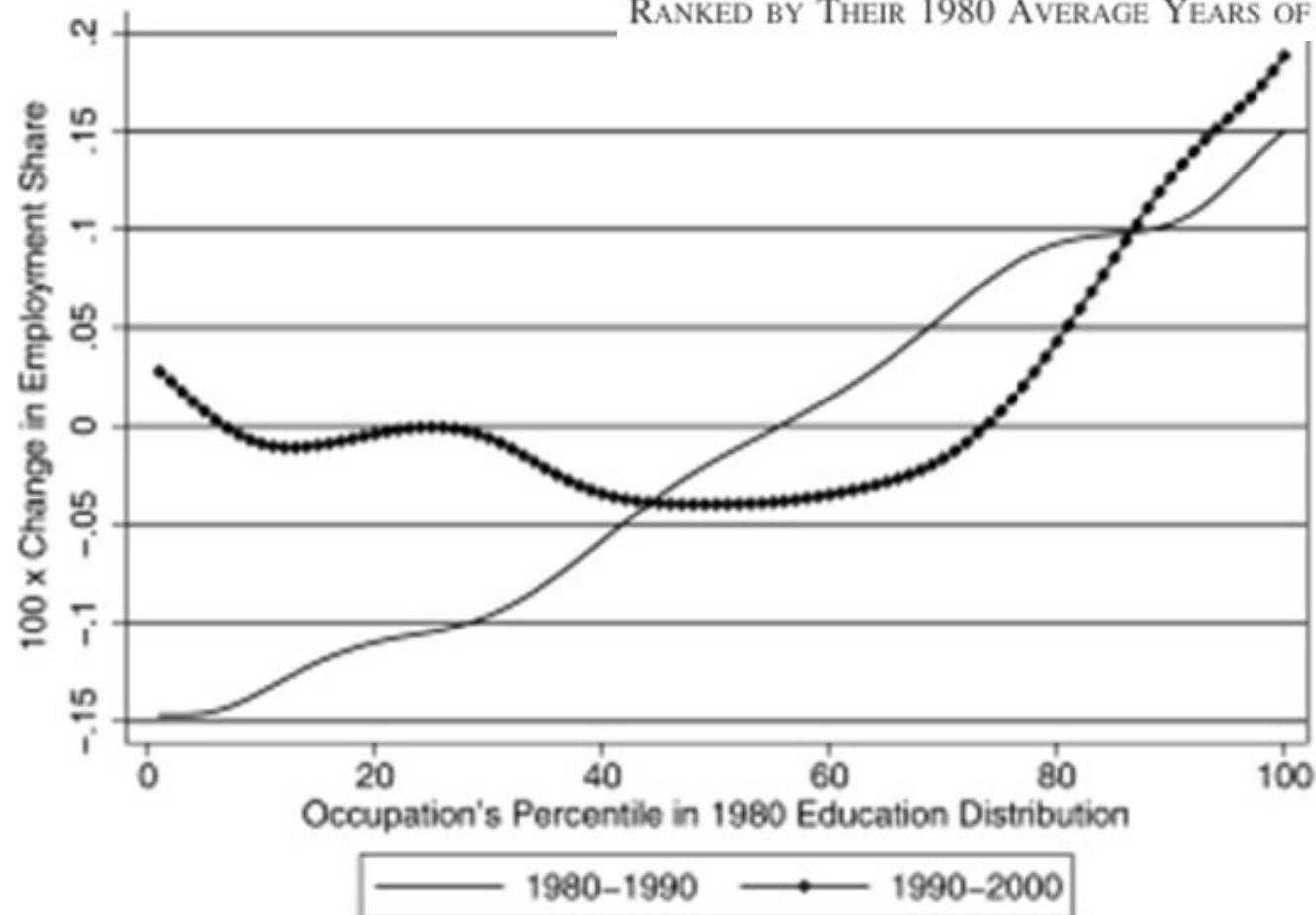
The **dark side**

- **Polarization** (Autor)
- **Segregation** (Florida)
- **Superstardom** (Brynjolfsson & McAfee)



The dark side

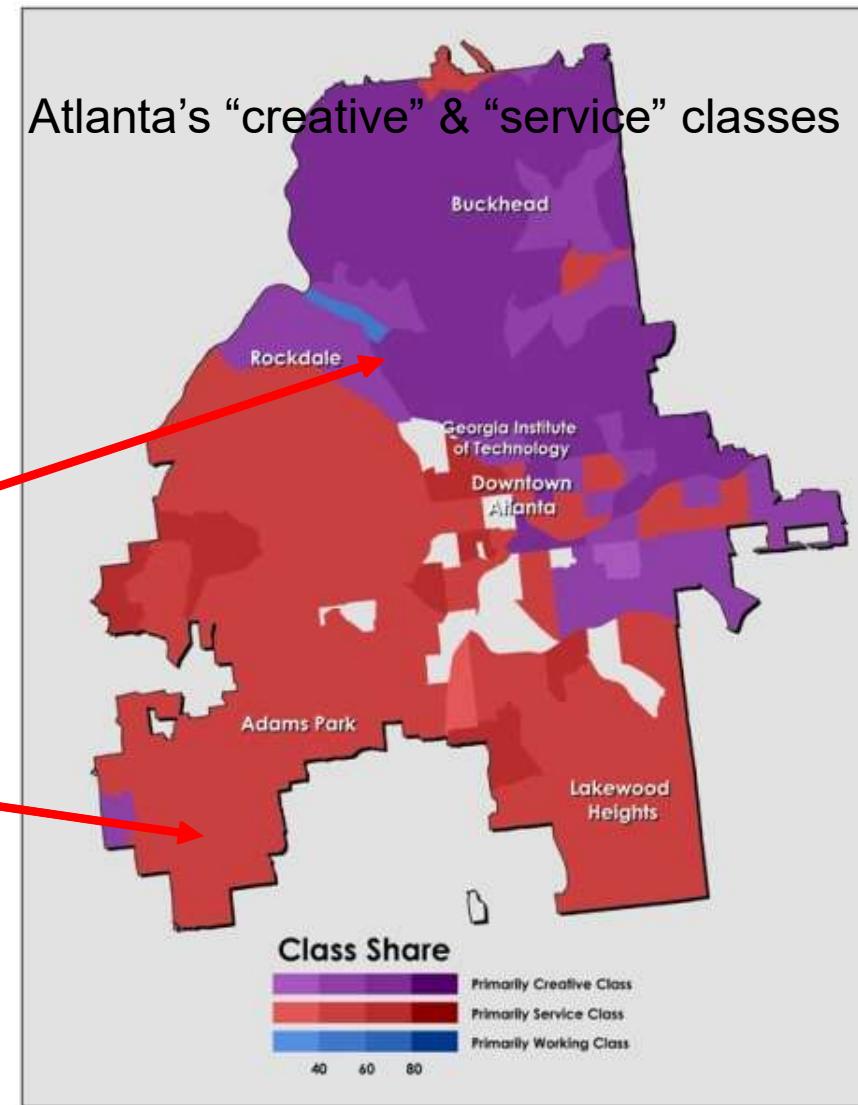
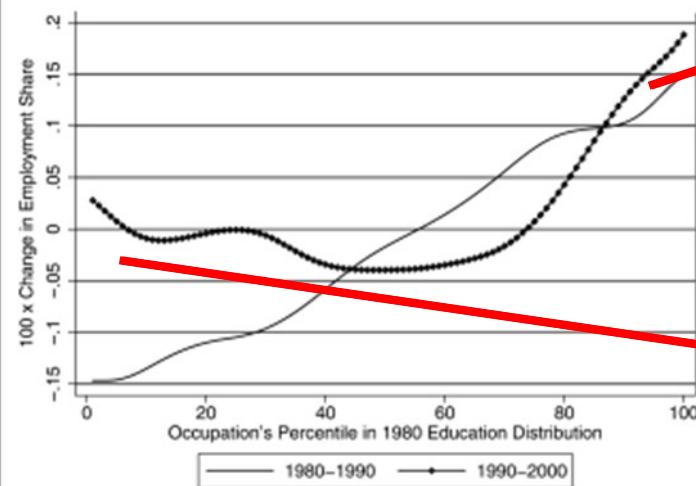
- **Polarization (Autor)**





The dark side

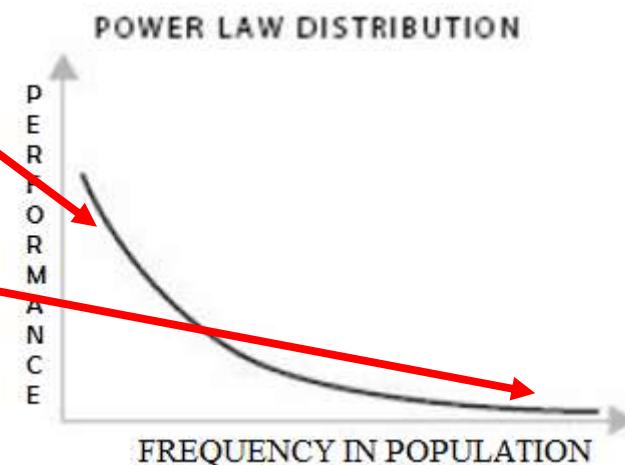
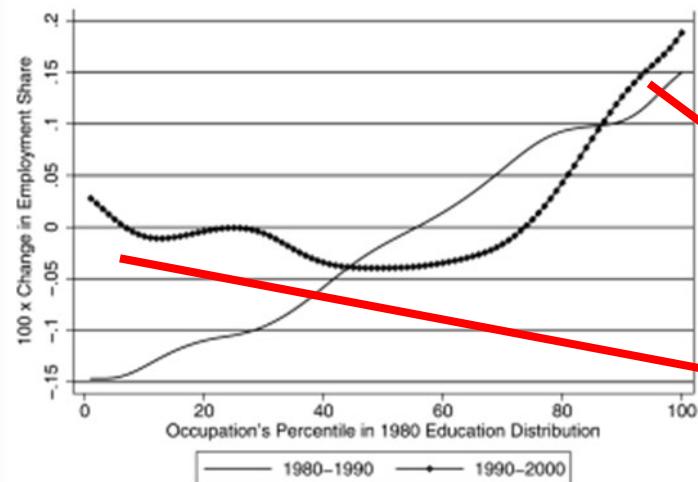
- **Polarization** (Autor)
- **Segregation** (Florida)





The dark side

- **Polarization** (Autor)
- **Segregation** (Florida)
- **Superstardom** (Brynjolfsson & McAfee)





The **bright** side

- Superstardom
 - **long tail** (Anderson): niche entrepreneurship
- Segregation
 - creative peripheries (Jeppesen & Lakhani)
 - **empowerment** (Sen)
 - Ex: industrial districts
- Polarization
 - services resilience (Autor)
 - **servitization** (Baines) as enabler for *creativity* and *social intelligence*
(e.g., *districts move to post-purchase services*)



But what kind of **niche services peripheral entrepreneurs** shall offer?

Dematerialization → L

(subtracts labour) -

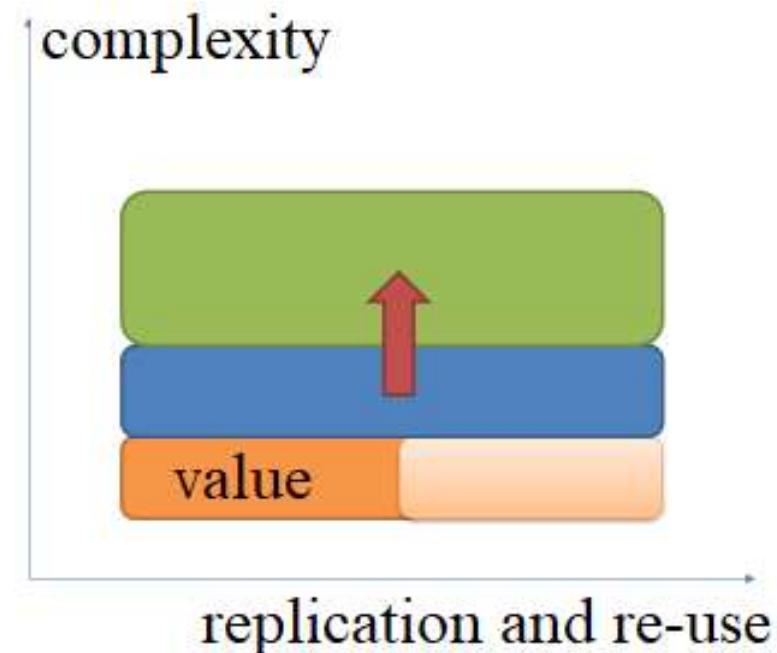
- **Learning Machines → L**

(displaces labour) -

- **Enabling intelligence → L**

*('augments' labour with
creativity & social intelligence)* +

→ **managing the transition** is key





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CONSUMPTION



From property of goods to **access to services** (servitization) and experiences

From *what* (production becomes a commodity) to **why** (meaning & world-making)

From broadcasted content to **relational** content

From user vs. producer to **co-production** & peer-to-peer

→ We expect higher demand for

... **diffused** human-centric services

... facilitating access to complex **relations**

... and joint **content** production



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MARKETS



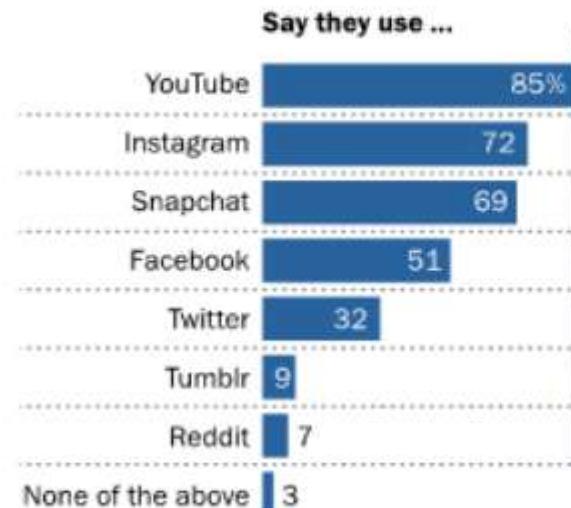
- *The link is key!*
 - Offering connectivity means being an enabler → **platforms**
 - Network effects create lock-ins → **monopoly**
 - Platforms extract **rents**
- BUT! **Competition and pressure do exist**
 - **Regulation**
 - **Organized stakeholders:** gig-economy workers, competitors, consumers (*user communities*)
 - **Continuous innovation**
 - **zero switching costs & overlapping** → platform competition
 - Es: Facebook vs. Instagram

Digitalization & Markets

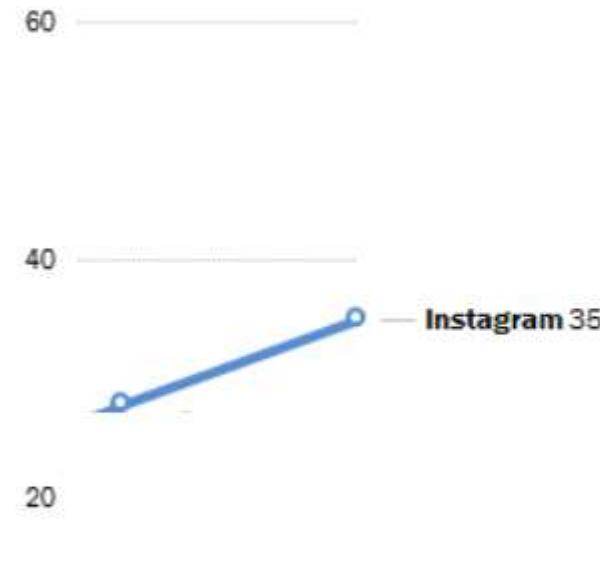
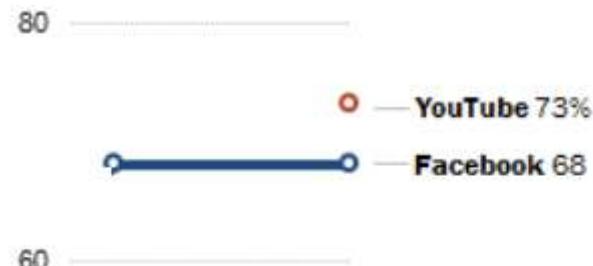
- *Facebook vs. Instagram*

YouTube, Instagram and Snapchat are the most popular online platforms among teens

% of U.S. teens who ...



% of U.S. adults who say they use the following social media sites online or on their cellphone





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EDUCATION



Need for engineers, of course!

→ There no such thing as “enough engineers”... (in Italy)



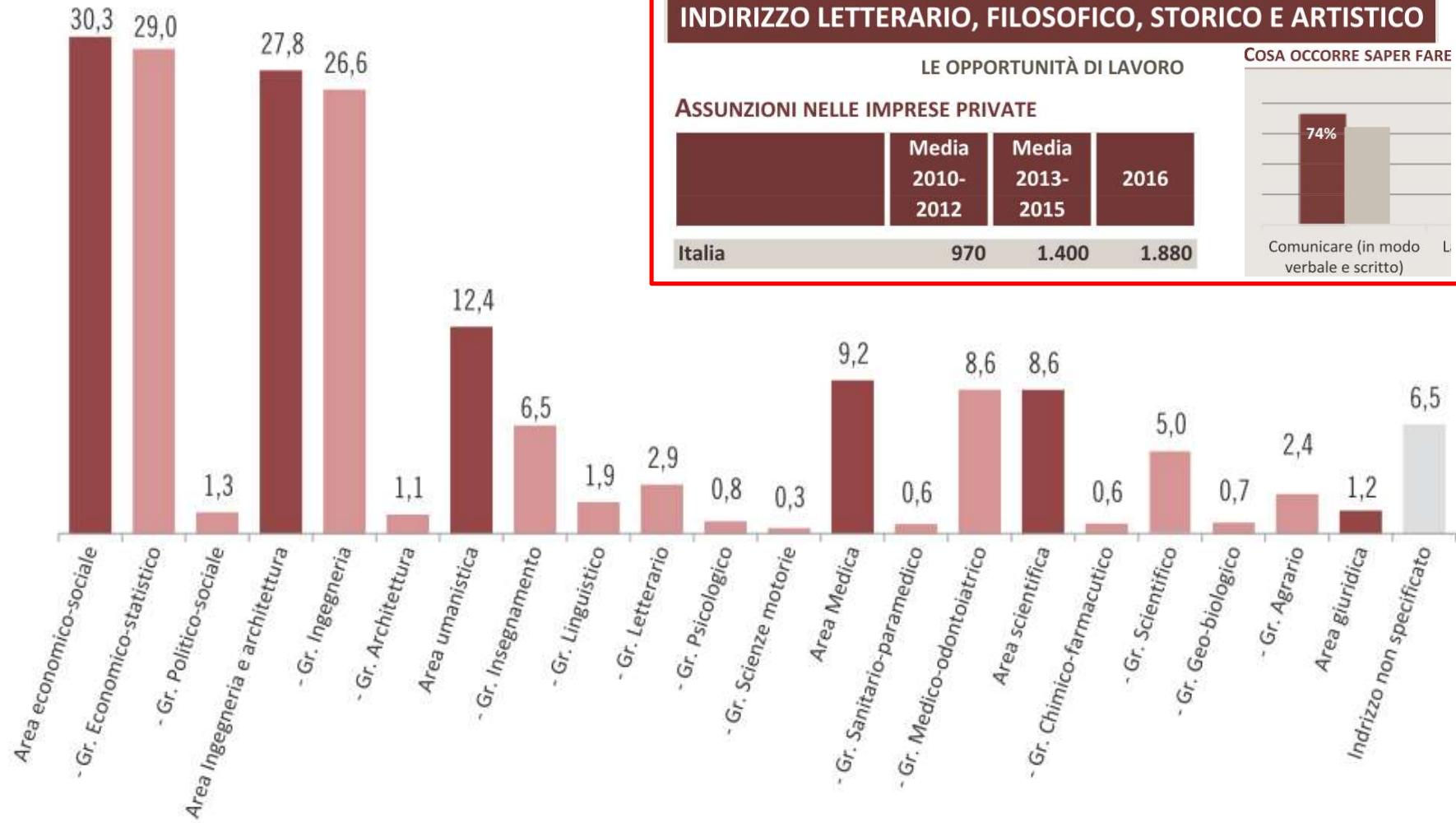
ASSUNZIONI NELLE IMPRESE PRIVATE

	Media 2010- 2012	Media 2013- 2015	2016
Italia	8.070	8.800	11.810

Fonte: Unioncamere - Ministero del Lavoro, Sistema Informativo Excelsior

Fonte: Unioncamere - Ministero del Lavoro, Sistema Informativo Excelsior

ASSUNZIONI DI LAUREATI PROGRAMMATE DALLE IMPRESE, PER AREA DISCIPLINARE E INDIRIZZI DI STUDIO ANNO 2016 (VALORI ASSOLUTI IN MIGLIAIA)



Fonte: Unioncamere - Ministero del Lavoro, Sistema Informativo Excelsior

“Ivano Dionigi, Almalaurea President... :



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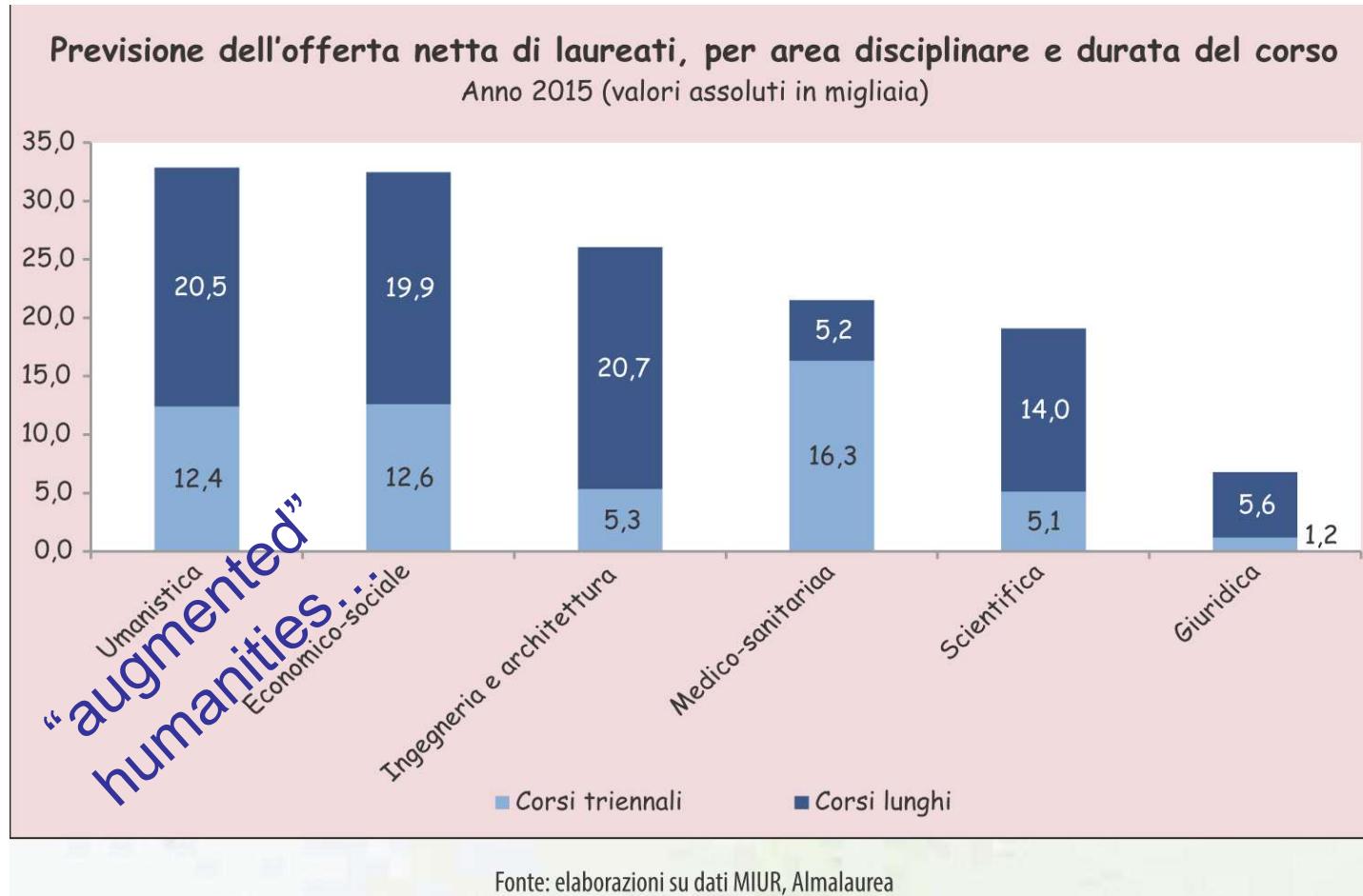
«*In the age of knowledge and soft skills there must be Renaissance characters... Entrepreneurs say they need people ... able to ask questions, not only to give answers immediately. ...*

Pietro Valdes, Managing Director at Badenoch & Clark Italy...

«*New firms ... ask for roles more related to the person and her or his capability to think quickly. It is here that degrees in Humanities can make the difference. For example: a firm expert in market analysis through big data asked me ... [to find] a ‘Programmatic and Innovation Manager’. In the end we found a person with a degree in communication science... with the technical competence of a “hacker”...».*”

(*La Repubblica*)

Increase request for relational-intelligent people



Fonte: Unioncamere - Ministero del Lavoro, Sistema Informativo Excelsior

Conclusion



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It is possible to imagine machines and man to evolve their relationship in balanced way ... in the end!

BUT

The problem is the short term!

Job losses NOT likely to happen in same **time and space**,
for same **people and competence** as job recovery.

→ *Real challenge? Likely not the future, but the present!*

Interpreting the change: the 4x2R model



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	<i>Thesis</i>	<i>Antithesis</i>
<i>phase 1</i>	Resistance	Rupture
<i>phase 2</i>	Restauration	Revolution
<i>phase 3</i>	Resilience	Reflexivity
<i>phase 4</i>	<i>Synthesis</i>	
	Re-design & Re-organize	



Interpreting the change: the 4x2R model



	TESI (l'esistente)	ANTITESI (il nuovo)
<i>fase 1</i>	(1.1) Resistenza = inerzia dell'esistente e crescita di resistenze conservative	(1.2) Rottura = affermazione del nuovo che irrompe con innovazioni radicali
<i>fase 2</i>	(2.1) Restaurazione = organizzazione attiva della difesa conservatrice e tentativo di ritornare al passato da restaurare	(2.2) Rivoluzione = crescita esponenziale delle aspettative sul futuro ed espansione della "bolla", legata alle attese rivoluzionarie diffuse tra i maggiori protagonisti
<i>fase 3</i>	(3.1) Resilienza = primo cedimento del sistema esistente che accoglie alcuni elementi del nuovo, per imparare e depotenziarne la forza	(3.2) Riflessività = esplosione della "bolla" delle aspettative e sviluppo di forme di innovazione riflessiva, che si danno carico degli effetti negativi indotti sull'ambiente di applicazione
<i>fase 4</i>	SINTESI (4.1) Riprogettazione & (4.2) Riorganizzazione: superamento della dicotomia tra vecchio e nuovo, realizzando una sintesi che li integra in un nuovo paradigma, sia in termini di idee (riprogettazione) che di messa a punto pratica di un diverso ordine (riorganizzazione)	





Want more of this stuff? Here it is!



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*Francesco Rullani &
Enzo Rullani (2018)*

DENTRO LA RIVOLUZIONE DIGITALE

Per una nuova cultura
dell'impresa e del
management.

Giappichelli Editore.

