

Diversity and Productivity

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Diversity Defined

- ⊖ The condition of having or being composed of different elements
- ⊖ The fact of many different types of things or people being included in something
- ⊖ Different people – different social and ethnic backgrounds, cultures, genders, sexual orientations, age, education

→ Different perspectives

→ Different ideas

→ **Impact**

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Why Collaborate?



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The Increasing Dominance of Teams in Production of Knowledge Wuchty, Jones & Uzzi, 2007 *Science*

Teams typically produce more frequently cited research than individuals do, and this advantage has been increasing over time.

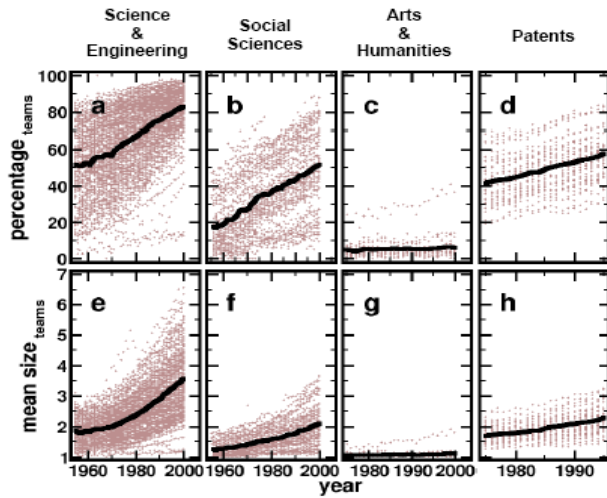
Teams now produce exceptionally high-impact research, even where that distinction was once the domain of solo authors.

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Team Dominance in Knowledge Production

Web of Science Data on 21.1 millions papers 1945-2006 + 1.9 million worldwide patents

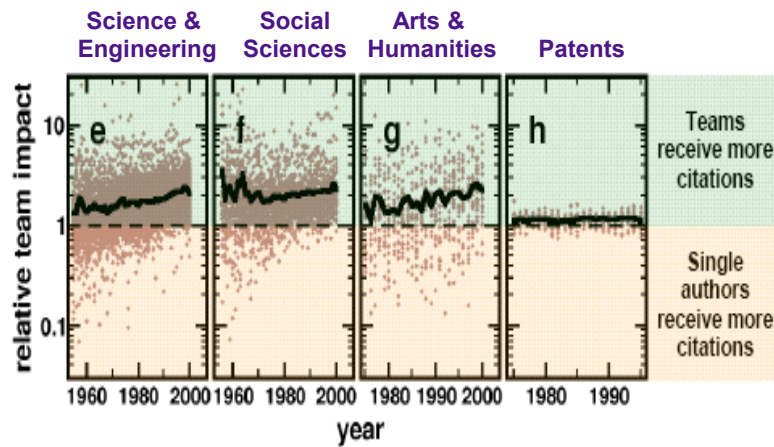


Collaborated work on the rise

No. of co-authors on any project on the rise

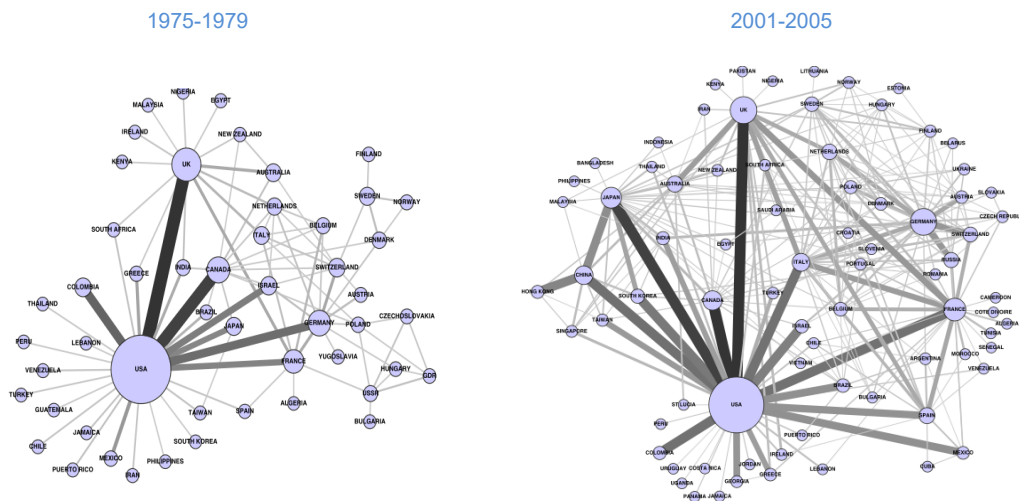
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Collaborated Work Has Higher Impact



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The Planetary Network of Scientific Collaborations

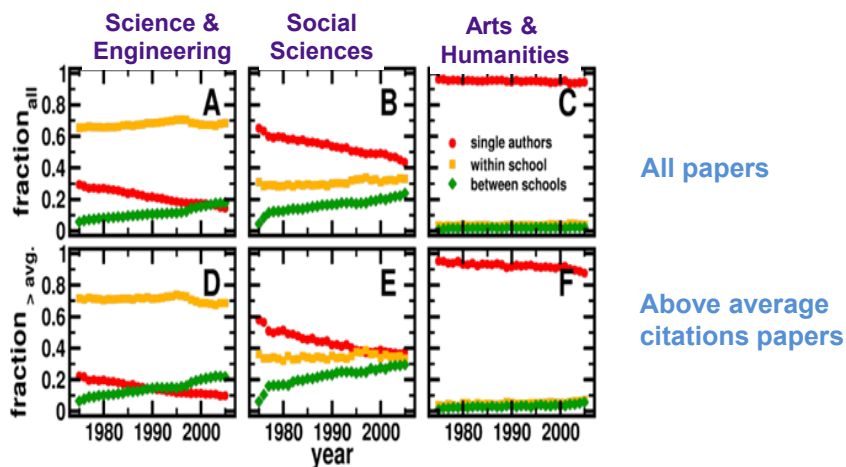


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From: Jones, Wuchty, and Uzzi (2009)

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High Impact Teams



Cross-school collaboration is the only steadily growing segment, esp. for high impact work

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Jones, Wuchty, & Uzzi 2009 Science

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**I know there is strength in the differences between us.
I know there is comfort where we overlap.**

~ Ani DiFranco, American Singer/Song-Writer



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Similarity

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Birds of a Feather



Birds of a feather flock together [物以類聚]

~ Proverb

People love those who are like themselves

~ Aristotle

Similarity begets friendship

~ Plato

Homophily (“love of the same”)



Similarity attracts

- ✓ Aesthetically pleasing
- ✓ Reduced uncertainty
- ✓ Easy communication
- ✓ Social cohesiveness

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Pet & Owner Look-alike



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Difference

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the quality that makes one person or thing unlike another



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a point or way in which people or things are not the same



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**something that people do not agree about –
a disagreement, quarrel, dispute or controversy**



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a noticeable change or effect



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Some Empirical Evidence

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Diversity in Plants Increases Productivity



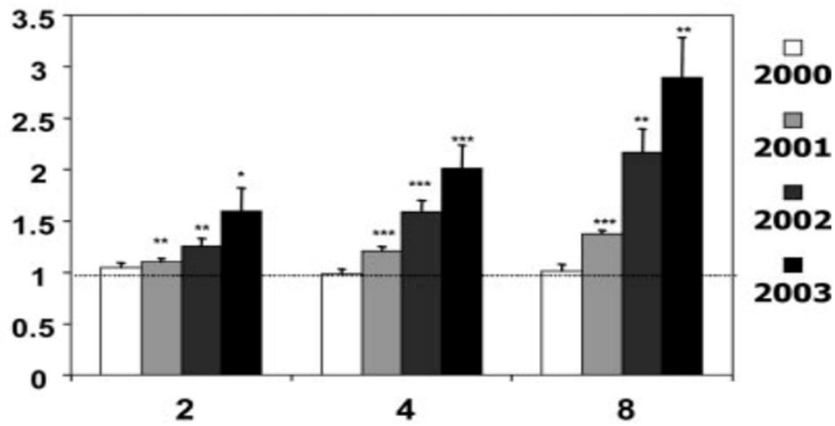
102 plots in Wageningen, The Netherlands, from 2000 – 2004
Single, 2, 4 or 8 varieties

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Van Ruijven & Berendse 2004 *PNAS*

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Relative Yield Total (biomass)



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Van Ruijven & Berendse 2004 *PNAS*

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Diversity in Workforce in Belgium

Data:

- ⊖ 2431 firms over 2+ consecutive years
- ⊖ 57% manufacturing
 - 12% wholesale/retail trade, auto repair, personal/HH goods
 - 10% construction
 - 11% real estate
 - 10% other
- ⊖ 27% women, 45% white-collar, 61% < 10 years tenure; 2% part-time



Diversity on Productivity

- Age diversity (-1.3%)
- + Education diversity (+2.7%)
- Gender diversity for traditional industries (-3% to -5%)
- + Gender diversity for information/communication/technology industries (+2.5% to 6%)
- *Gender diversity (-1.7%) in full sample*

Diversity in Fashion Styling Industry in Taiwan

	<u>Store Performance</u>
Store size	.02
Age of store	-.15
HPWS	.57***
Age diversity	-.23*
Professional age diversity	.22*
Expertise diversity	-.01
HPWS x Age diversity	.31*
HPWS x professional age diversity	-.02
HPWS x expertise diversity	.11
R ²	.45

*** $p < .001$, * $p < .05$

HPWS: High performance work system



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HPWS: High performance work system



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Is similarity or difference favored in academia?

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A nonrandom sample survey of my peers

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Idea for Favorite Paper came from...

Lightbulb

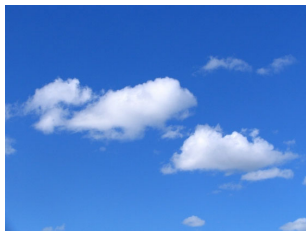
86% personal experience / interactions

- + reading a paper
- + finding gaps in the literature
- + attending talks
- + popular press
- + chatting



Free association task - BLUE

BLUE



GREEN



Necessary Heterophily

Identical Co-authors Provide Zero Complementarity



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Leveraging Difference → Impact



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Yin-Yang Complementarity

Growth Focus

Seizes opportunities
Multi-pronged approach
Quick wins

Abstract thinking

See the forest
Ambitious goal

Analytic thinking

Careful weighing pros & cons

Safety Focus

Vigilant executions
Stay focused on the goal
Programmatic progress

Concrete thinking

Cultivate the trees
Cautious implementation

Holistic thinking

Context matters

Pros and Cons of Diverse Teams

- Social integration & cohesiveness
- + Creativity of ideas
- + Innovativeness of approach
- + Magnitude of Impact

If you think you are too small to make a difference,
try sleeping in a closed room with a mosquito.

~ African Proverb



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