

Section

Mathematics teacher education: Challenges and initiatives

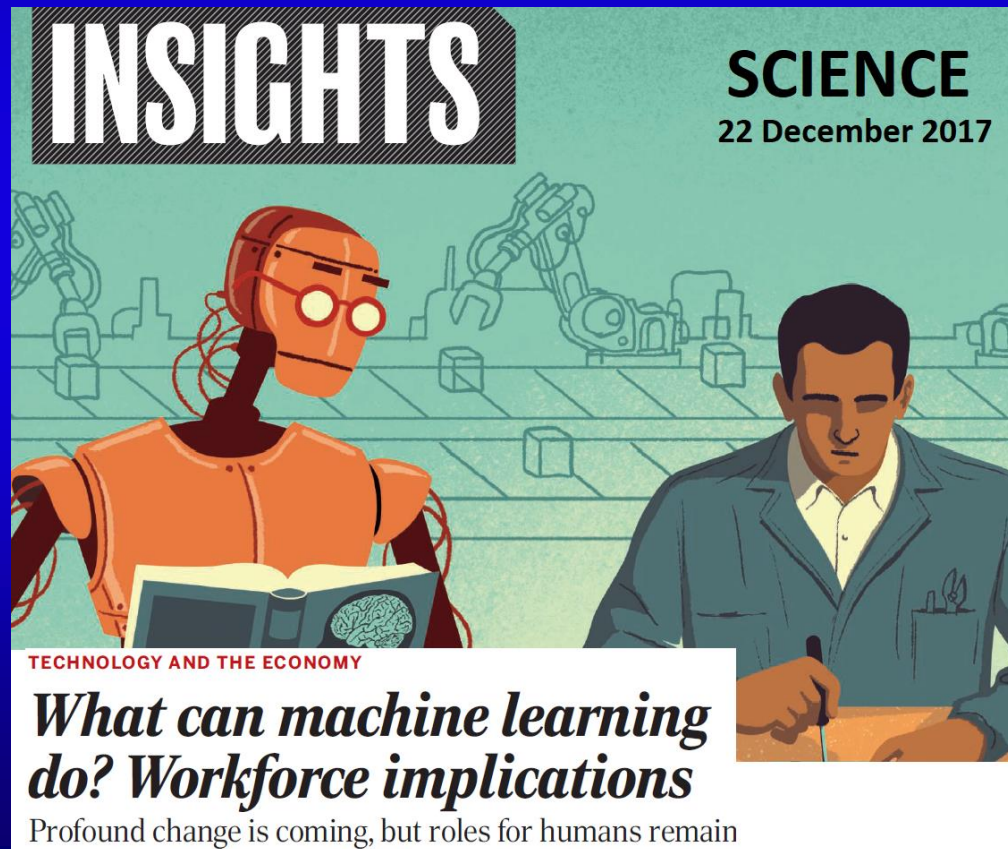
Roberto Araya
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Teacher's quality Standards

Knowledge of relationships within mathematics and with other disciplines

Provide students with mathematical activities, problem solving tasks and real-life investigations to meet the needs of all students

1. Future of work needs changes in education



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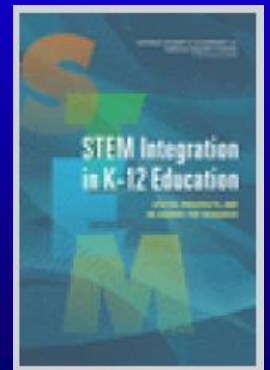
IT'S NOT IMMIGRANTS, IT'S **AUTOMATION!**

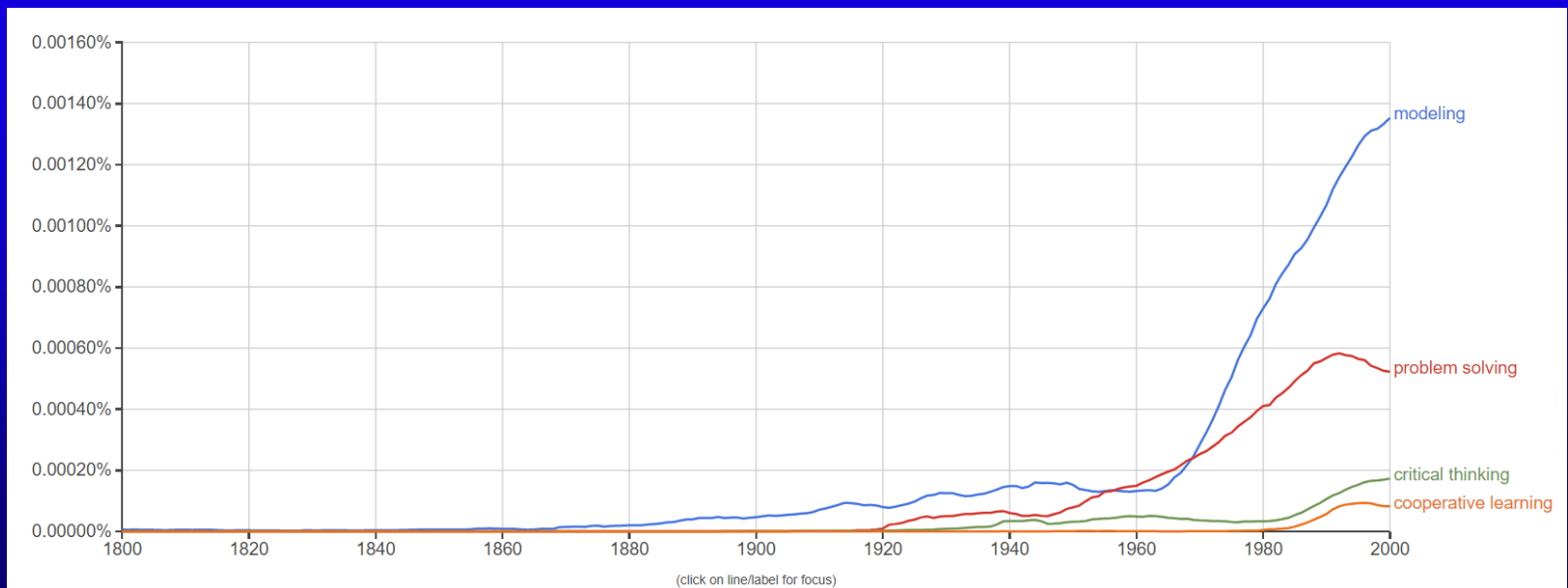
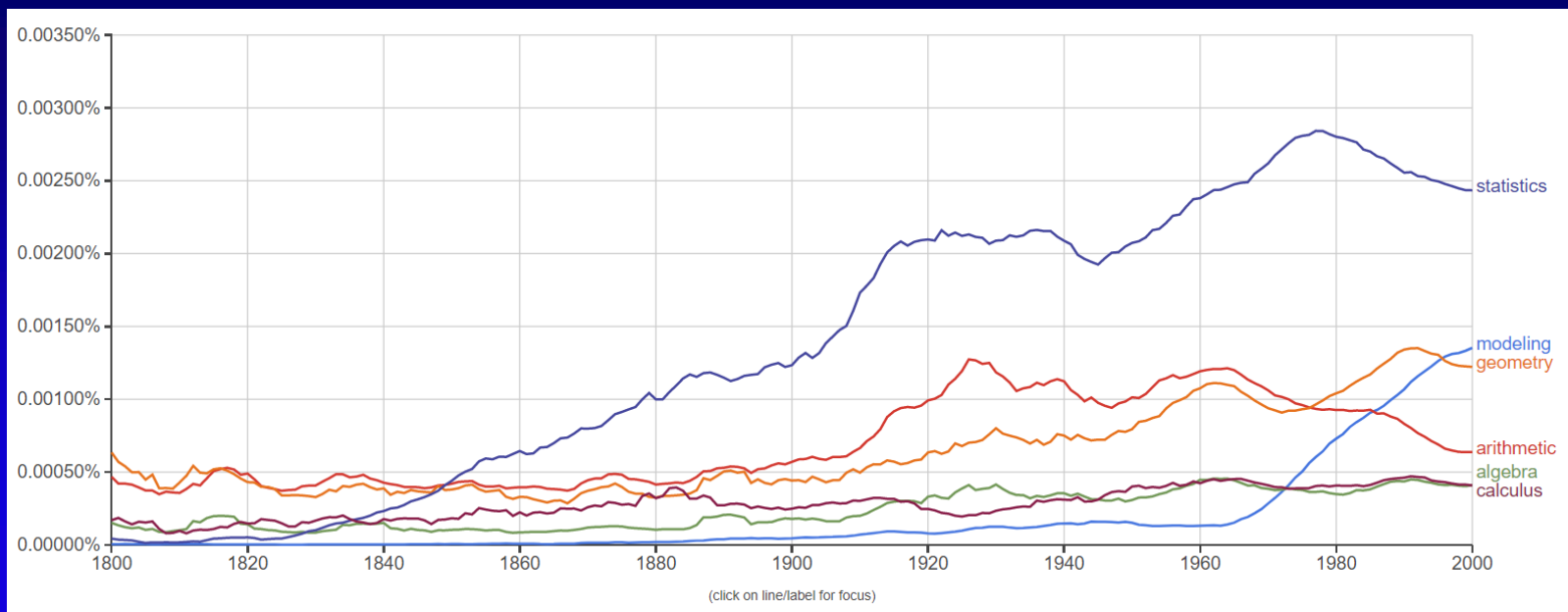


1. Future of work needs changes in education

Jobs in the near future:

- More complex and less structured
- Shorter duration → need to learn much faster
- Multicultural teams and distant locations
- Integrate more disciplines
- Evidence based
- Use and adapt models





Another kind of math?

- Beyond proportional thinking
- Beyond quadratic modeling
- Beyond isolation
- Population thinking
- Computational thinking
- Dynamic system thinking

2. Changes in education need changes in teaching practices

New teachers

New contents and practices

Lesson study

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3. Example: Cells and Organisms

Are there any pattern in embryo developments?

Is cell division enough to form an organism?

Math modeling beyond cell division

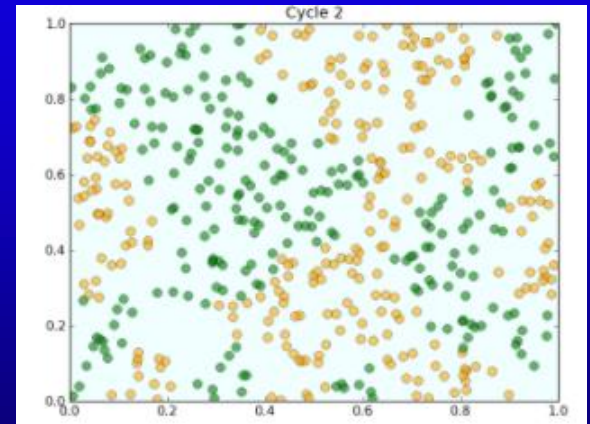
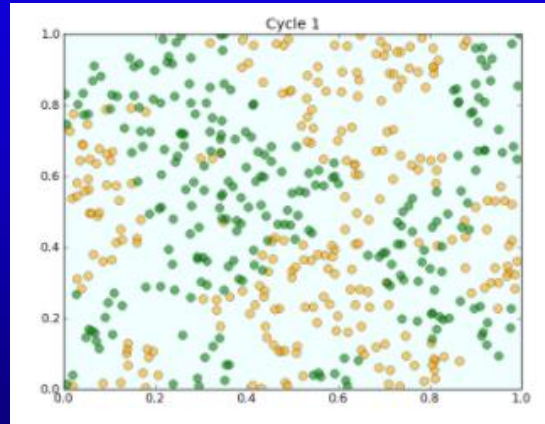
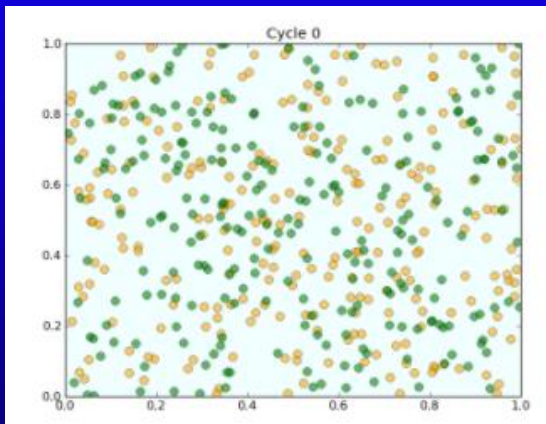
Clase Pública
Recoleta

4. Example: World Peace

Thomas Schelling

1921 - 2016

Micromotives and Macrobehavior



2005 Nobel Prize

segregation

4. Example: World Peace

Ibn Khaldun

1332 - 1406

British historian Arnold J. Toynbee called the *Muqaddimah* "a philosophy of history which is undoubtedly the greatest work of its kind that has ever yet been created by any mind in any time or place".

Asabiyyah

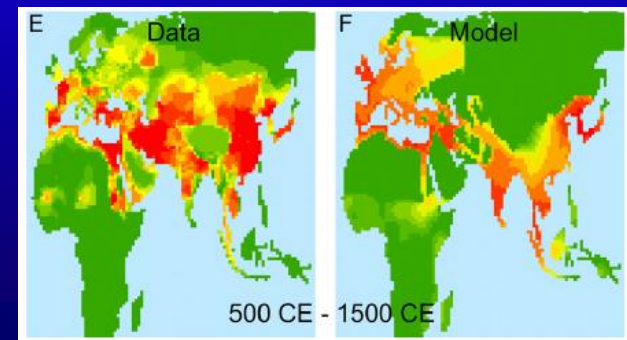
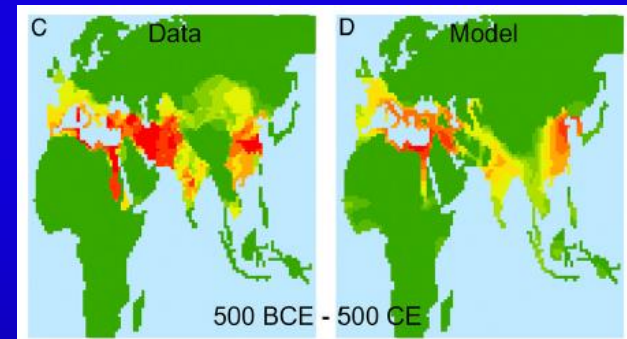
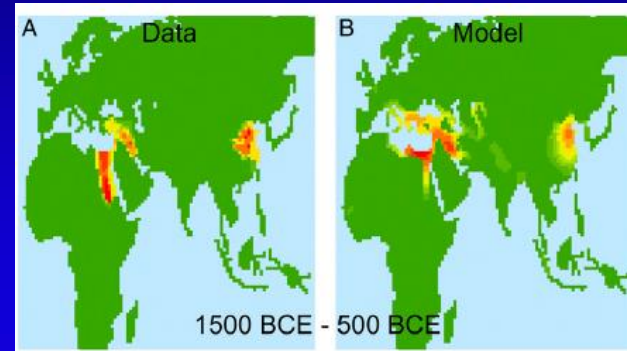


4. Example: World Peace

Peter Turchin
1957 -

Clodynamics

mathematical modeling of
historical processes



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