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Three decades from the end of work: systematic review in the times of artificial intelligence.

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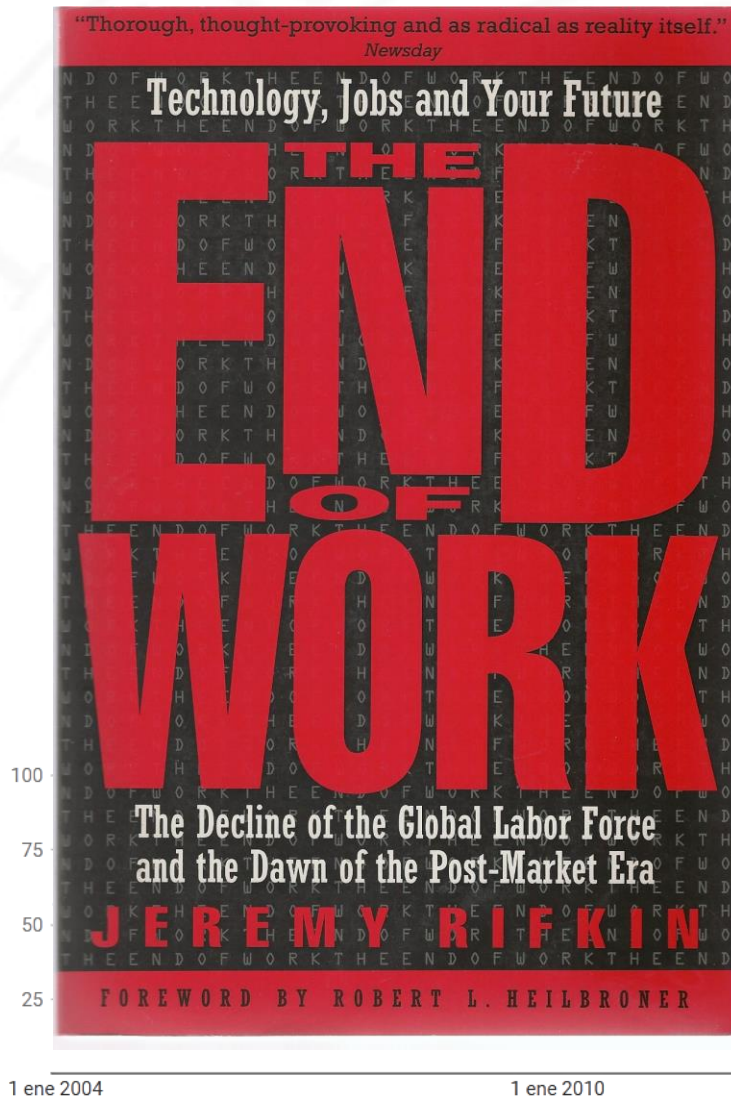
Departamento de Economía Aplicada, Pública y Política Económica

Granada, 14 de Junio de 2024

El Señor le dijo a Adán:

“...con el sudor de tu rostro
comerás el pan...”

Génesis 3:19

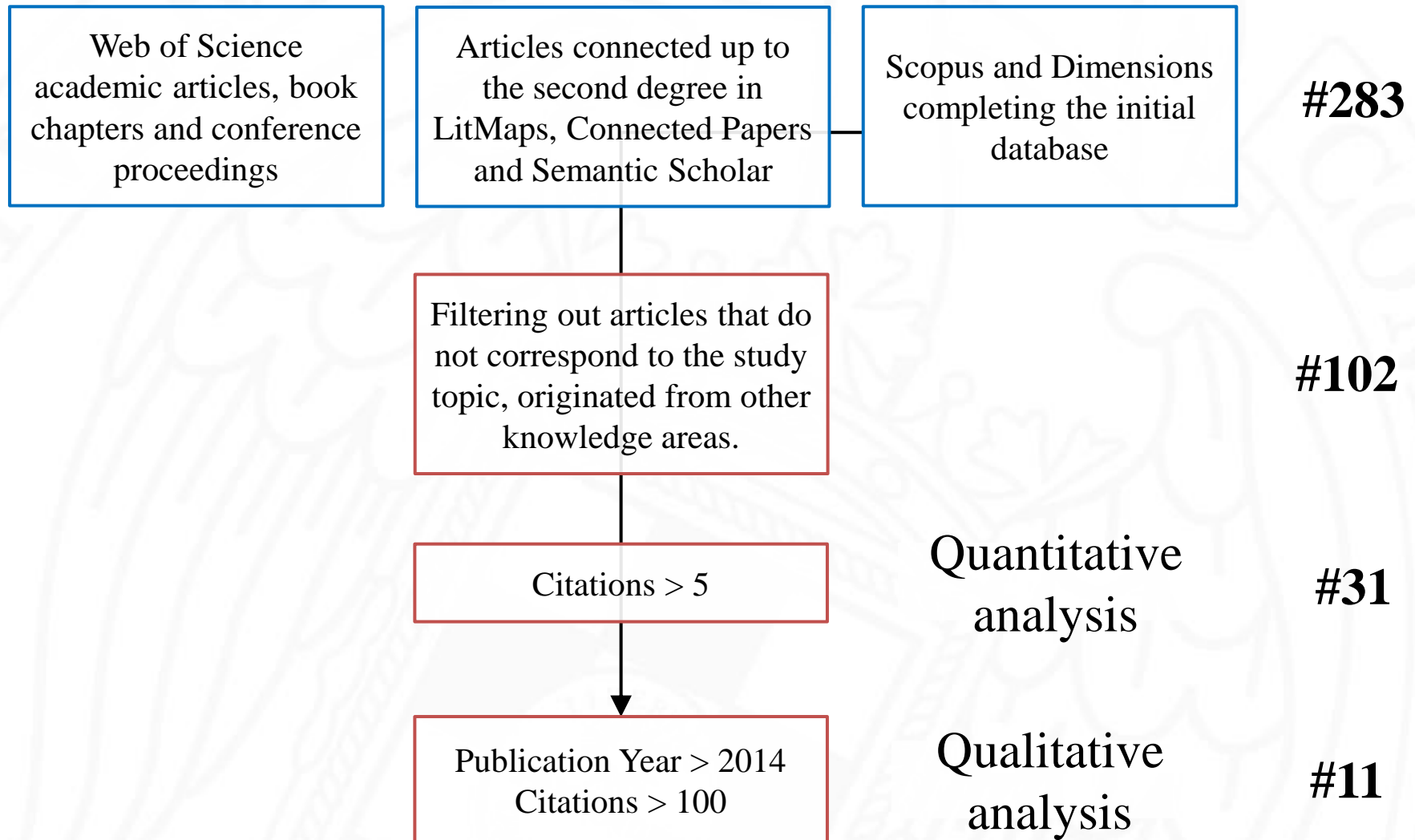


Rifkin argumenta que el avance tecnológico, especialmente en áreas como la automatización, la inteligencia artificial y la robótica, llevará a una disminución significativa de la demanda de mano de obra humana en varios sectores económicos. En consecuencia, prevé una disminución masiva en la cantidad de empleos necesarios, lo que podría llevar al desempleo masivo y a una crisis económica y social generalizada.

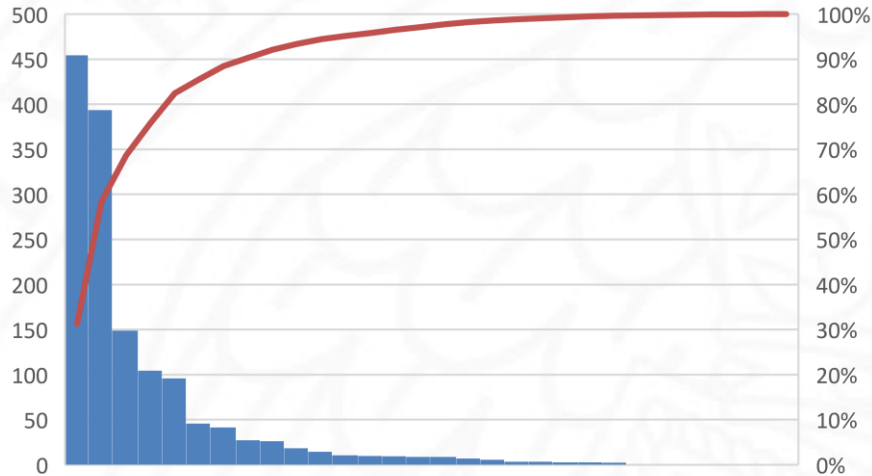


¿Estamos ante un punto de inflexión en la historia económica o ante otra transformación tecnológica que ensancha la economía, mejora la productividad y permite finalmente un incremento de los niveles de vida?

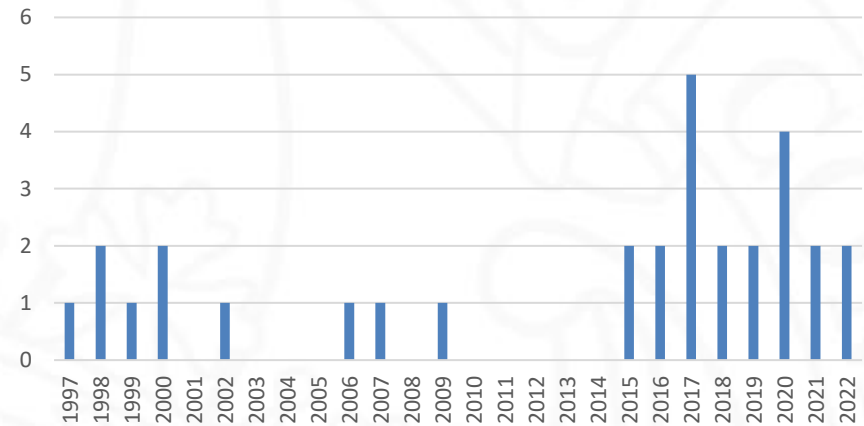
- Revisión sistemática desde 1995 de los *papers* más destacables (mayor número de menciones) que abordan el término “**the end of work**” en el campo de la Economía
- Análisis de autores y argumentos, con evidencias a favor y en contra



Citations per year



Publications per year



authors	#
Granter	11
Meda	2
Rifkin	2
Acemoglu	2
Arntz	2
Nun	2
Bowring	2
Stacey	2

coauthors	#
Zierahn	5
Gregory	3
Pyka	2
Restrepo	2
Arntz	2
Salomons	2

Affiliations	#
N8 Research Partnership	10
University of Manchester	9
University of Trieste	3
Cardiff University	3
Complutense University of Madrid	3
UDICE-French Research Universities	3

David Autor

[MIT](#)

Carl Benedikt Frey

Michael A Osborne

[Oxford University](#)

Anna Salomons

Ulrich Zierahn-Weilage

[Utretch University](#)

Daron Acemoglu

Pascual Restrepo

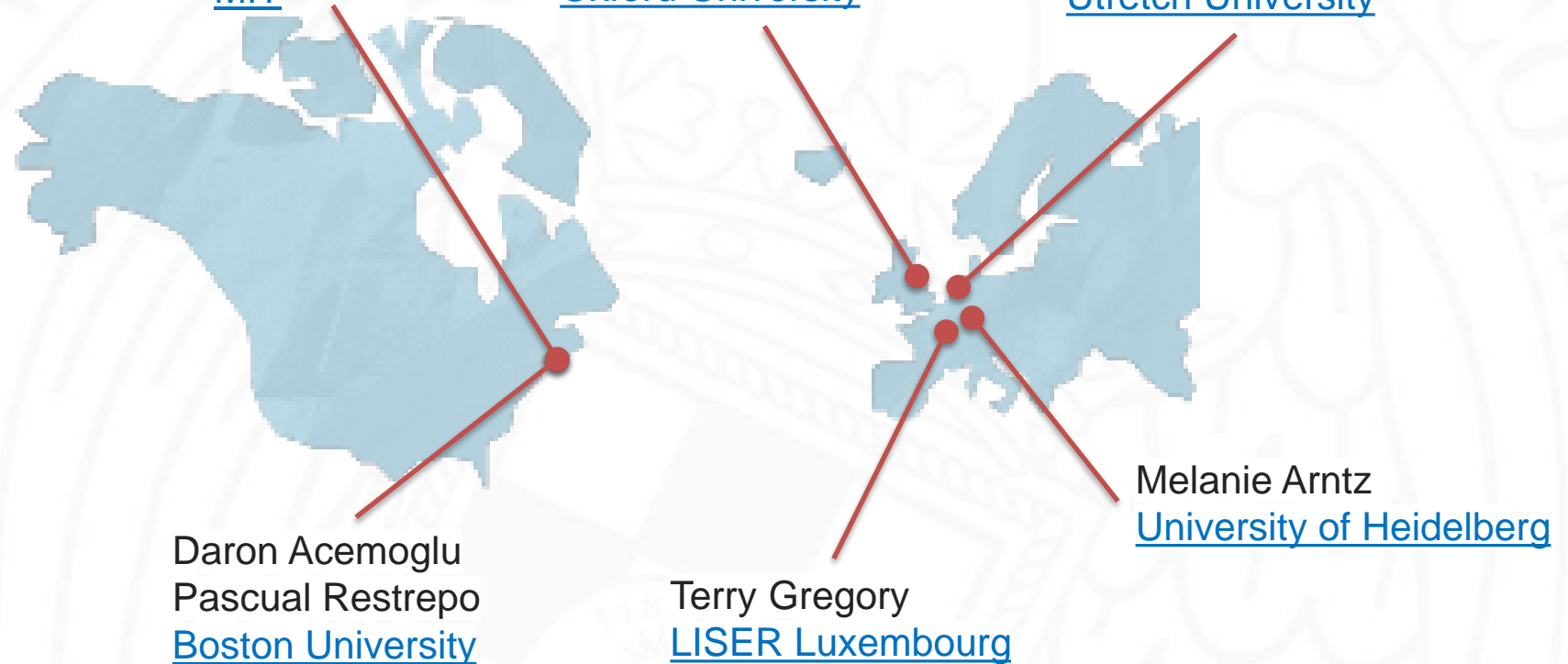
[Boston University](#)

Terry Gregory

[LISER Luxembourg](#)

Melanie Arntz

[University of Heidelberg](#)



Authors	Title	Publication Year
Frey, C. B., & Osborne, M. A.	The future of employment: How susceptible are jobs to computerisation?	2017
Autor, D.	Why are there still so many jobs? the history and future of workplace automation	2015
Arntz, M., Gregory, T., & Zierahn, U.	The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis	2016
Makridakis, S	The forthcoming Artificial Intelligence (AI) revolution: its impact on society and firms	2017
Mokyr, J., Vickers, C., & Ziebarth, N. L.	The history of technological anxiety and the future of economic growth: Is this time different?	2015
Acemoglu, D; Restrepo, P	Robots and Jobs: Evidence from US Labor Markets	2020
Gregory, T., Salomons, A., & Zierahn, U.	Racing With or Against the Machine? Evidence from Europe	2016
Autor, D. and Salomons A.	ROBOCALYPSE NOW?	2017
Arntz, M; Gregory, T; Zierahn, U	Revisiting the risk of automation	2017
Borland, J., & Coelli, M.	Are Robots Taking Our Jobs?	2017
Klenert, D., Fernandez-Macias, E., & Anton, J. I.	Do robots really destroy jobs? Evidence from Europe	2022

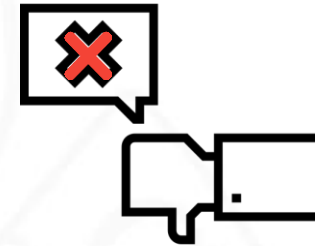


- ACEMOGLU AND RESTREPO
- FREY AND OSBORNE
- MAKRIDAKIS

- Acemoglu & Restrepo (2020) conclude that the spread of industrial robots has led to a **decrease in employment and wages** across US commuting zones.
- Autor & Salomons (2017) indicate that while productivity growth has not reduced jobs overall, it has skewed the distribution of employment toward high-skill workers at the expense of middle-skill workers, contributing to **employment polarization**.
- Frey & Osborne (2017), estimate a 47% of jobs are at high risk by using an **occupation-based** approach.

- AUTOR
- GREGORY
- SALOMONS

- KLENERT
- BORLAND AND COELLI
- ARNTZ
- MOKYR



- Klenert et al. (2022) find a positive correlation between robot adoption and total employment in Europe, suggesting that sectors with high levels of automation have been more **resilient** in terms of employment.
- Borland & Coelli (2017) conclude for the Australian labor market that there is no indication of decreasing aggregate employment, with **total hours worked per capita remaining stable**.
- Arntz et al. (2017) uses a **task-based approach** to estimate that only 9% of jobs are at high risk of automation across OECD countries.

Unemployment rate



Workforce participation rate



Labor productivity (growth)



Frey & Osborne (2017) suggested that 47% of jobs could be automated before 2030, indicating a significant break from previous job trends, and 28 occupations particularly at risk.

- From 2008 to 2018, these occupations didn't experience rapid job loss, and projections for 2019 to 2029 also don't foresee significant declines, consistent with previous trends.
- Job declines are often linked to previous computing technology waves and trends like offshoring, rather than new AI and robotics automation.
- Empirical evidence from France and other countries supports that automation increases productivity, lowers prices, and expands market size, leading to higher employment.
- Automation is not detrimental to employment; it modernizes production, making firms more competitive and able to hire more employees in a globalized market.

Handel, M. J. (2022). Growth trends for selected occupations considered at risk from automation. *Monthly Labor Review*.

Aghion, P., Antonin, C., Bunel, S., & Jaravel, X. (2023). The effects of automation on labor demand. *Robots and AI*, 15-39.





F. CONSTRUCTION

H. TRANSPORTATION AND STORAGE

J. INFORMATION AND COMMUNICATION

M. PROFESSIONAL, SCIENTIFIC AND TECHNICAL

P. EDUCATION

Q. HUMAN HEALTH AND SOCIAL WORK ACTIVITIES

A. AGRICULTURE, FORESTRY AND FISHING

C. MANUFACTURING

G. WHOLESALE AND RETAIL TRADE; REPAIR

O. PUBLIC ADMINISTRATION, DEFENCE; SOC. SECURITY

T. ACTIVITIES OF HOUSEHOLDS

Frey & Osborne (2017)

Sectors Likely to Gain Weight:

Healthcare and Social Assistance

Education

Science, Technology, Engineering (STEM)

Creative Industries

Personal Services

Sectors Likely to Lose Weight:

Manufacturing

Transportation and Logistics

Office and Administrative Support

Sales and Services





MUCHAS GRACIAS

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