

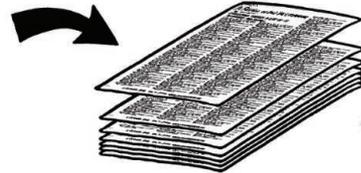
HOW MUCH SCIENCE IS THERE?

SCIENTIFIC PUBLISHING HAS BEEN ACCELERATING—A NEW PAPER IS NOW PUBLISHED ROUGHLY EVERY 20 SECONDS. LET'S IMAGINE A BIBLIOGRAPHY LISTING *EVERY* SCHOLARLY PAPER EVER WRITTEN. HOW LONG WOULD IT BE?

IF WE CAN FIT
140 CITATIONS
PER PAGE...



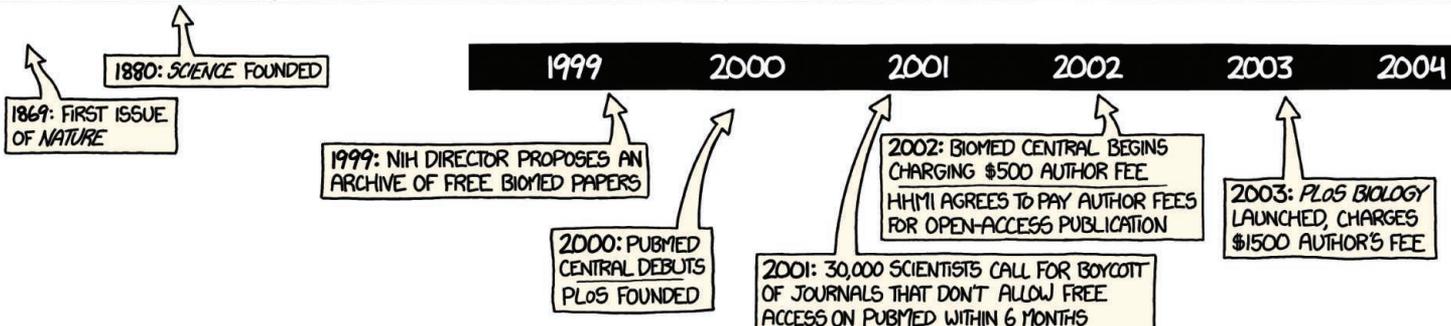
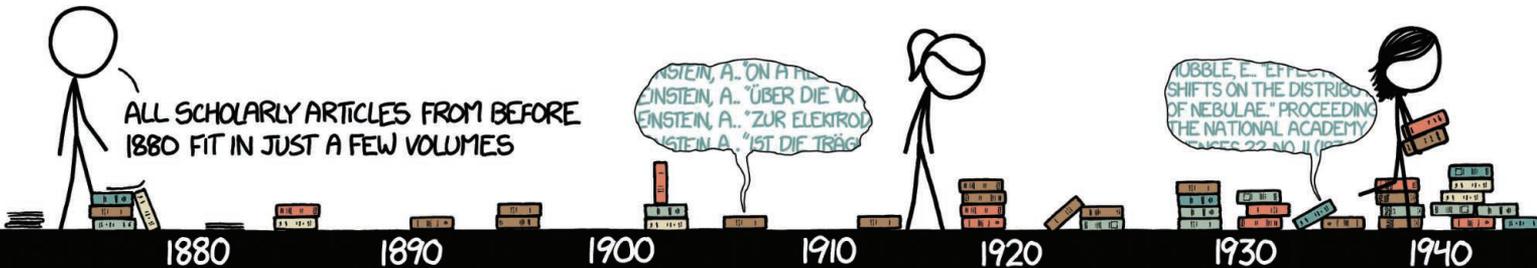
...1000 PAGES
PER BOOK...



...AND THEN WE START
STACKING BOOKS...



...THIS IS WHAT THE FULL LIST WOULD LOOK LIKE:



HOW OPEN IS IT?

SINCE THE ADVENT OF THE WEB, MUCH OF SCIENTIFIC PUBLISHING HAS BEEN MOVING TO OPEN ACCESS. ACCORDING TO SCIENCE-METRIX, OPEN ACCESS REACHED A "TIPPING POINT" AROUND 2011: MORE THAN 50% OF NEW RESEARCH IS NOW MADE AVAILABLE FREE ONLINE.

OPEN-ACCESS PAPERS

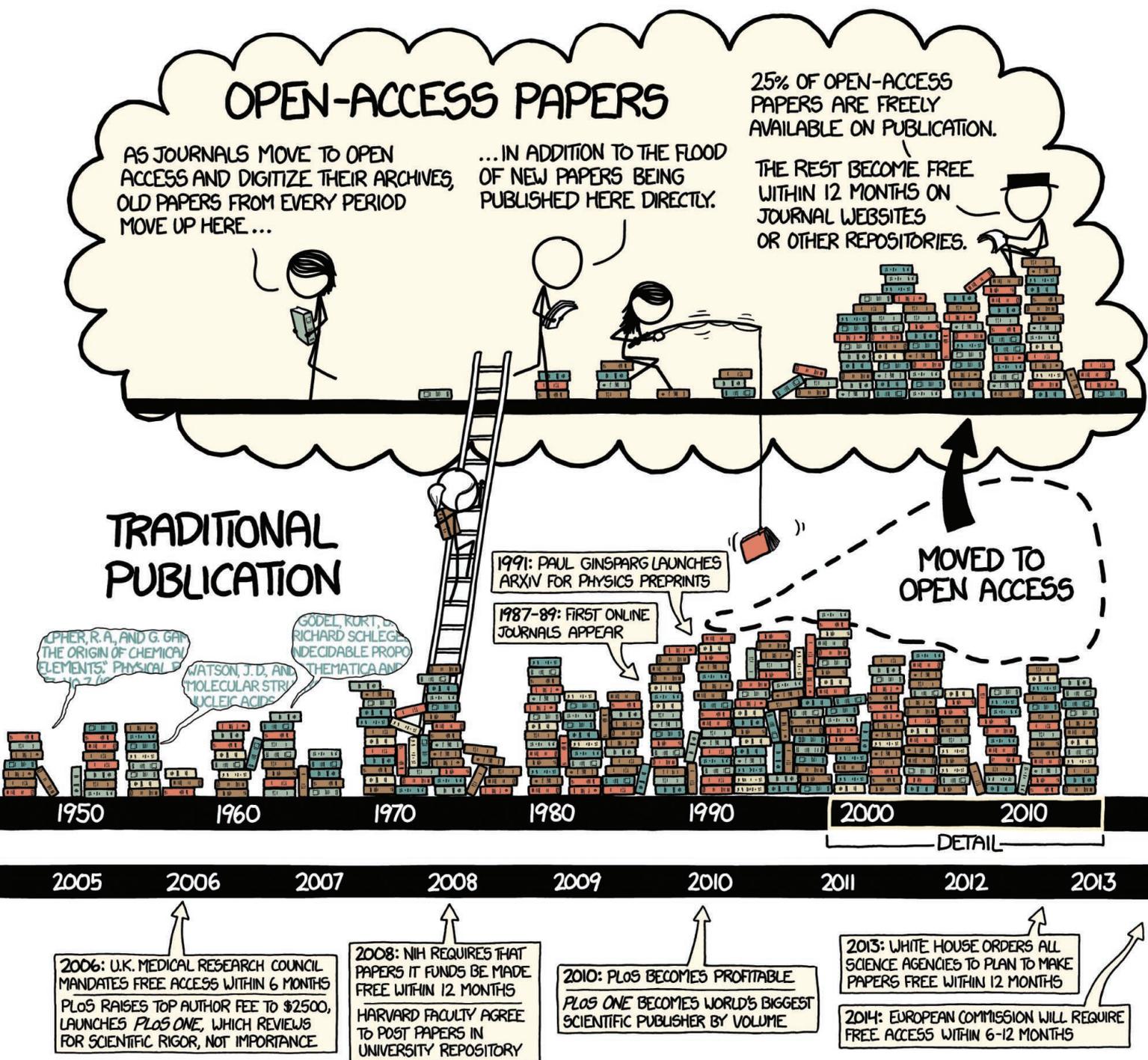
AS JOURNALS MOVE TO OPEN ACCESS AND DIGITIZE THEIR ARCHIVES, OLD PAPERS FROM EVERY PERIOD MOVE UP HERE ...

...IN ADDITION TO THE FLOOD OF NEW PAPERS BEING PUBLISHED HERE DIRECTLY.

25% OF OPEN-ACCESS PAPERS ARE FREELY AVAILABLE ON PUBLICATION.

THE REST BECOME FREE WITHIN 12 MONTHS ON JOURNAL WEBSITES OR OTHER REPOSITORIES.

TRADITIONAL PUBLICATION



BY RANDALL MUNROE • REPORTING BY JOCELYN KAISER AND DAVID MALAKOFF