Erdős–Bacon number

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# Introduction

A person's Erdős–Bacon number is the sum of one's Erdős number—which measures the "collaborative distance" in authoring mathematical papers between that person and Hungarian mathematician Paul Erdős—and one's Bacon number—which represents the number of links, through roles in films, by which the individual is separated from American actor Kevin Bacon. The lower the number, the closer a person is to Erdős and Bacon, which reflects a small world phenomenon in academia and entertainment.

In general, to have a defined Erdős–Bacon number, it is a necessary (but not a sufficient) condition for one to have both appeared in a film and co-authored an academic paper. It is not sufficient because it may still be impossible to reach Erdős through one's academic coauthors or Bacon through one's film co-appearances.

# Scientists

Astronomer Carl Sagan has an Erdős number of no more than 4 via Steven J. Ostro and a Bacon number of 2, for a total of 6. Physicist Richard Feynman has an Erdős number of 3 and a Bacon number of 3, having appeared in the film Anti-Clock alongside Tony Tang.

Electrical and computer engineering professor Robert J. Marks II has an Erdős–Bacon number of five. His colleague, intelligent design advocate William A. Dembski consequently has an Erdős–Bacon number of six and biochemist Michael Behe has an Erdős–Bacon number of seven

Geneticist Jonathan Pritchard appeared in the 1998 movie Without Limits which gives him a Bacon Number of 2. Pritchard has an Erdős Number of 4 thus giving him an Erdős–Bacon Number of 6.

Scientist and artist Ken Goldberg has an Erdős–Bacon number of 6. Goldberg co-wrote Connected: An Autoblogography About Love, Death & Technology and Peter Coyote was also in it. Coyote was in These Amazing Shadows with Zooey Deschanel. Deschanel was in Sundance Skippy with Kevin Bacon. This gives a Bacon number of 3.

Computer scientist and mathematician Hubie Chen has an Erdős–Bacon number of 5: he has an Erdős number of 3 via Manuel Bodirsky, and has a Bacon number of 2 via Rebecca Hall.

Mathematician Allan "Dan" Muir (at City University London from 1966 to 1990) has an Erdős–Bacon number of 7: using the name Allan Muir he has an Erdős number of 4 via Nicholas C. Yannelis, Karel Pickry and Kenneth Kunen and appeared as the Cresecent and Red Dog Knights in the film Jabberwocky using the name Dan Muir giving him a Bacon number of 3.

Theoretical physicist Stephen Hawking has an Erdős–Bacon number of 7: perhaps surprisingly, his Bacon number of 3 (via his appearance alongside Patrick Stewart in an episode of Star Trek: The Next Generation) is lower than his Erdős number of 4.

MIT Professor of Applied Mathematics Daniel Kleitman is currently considered to have the joint lowest Erdős–Bacon number of 3, having co-authored a paper with Erdős and appeared as an extra and consultant on Good Will Hunting alongside Minnie Driver who appeared with Bacon in Sleepers.

Actors

Former NCAA gymnastics champion Kiralee Hayashi may be the professional actress with the lowest Erdős number (3),[citation needed] having co-written a peer-reviewed mathematics paper on Riemannian manifolds with Fields medalist Shing-Tung Yau, and having a Bacon number of 2, giving her an Erdős–Bacon number of 5.

Danica McKellar, most famous for her role as Winnie Cooper in The Wonder Years, has an Erdős–Bacon number of 6, having coauthored a mathematics paper published while an undergraduate at UCLA. Her paper gives her an Erdős number of 4, and a Bacon number of 2, both of them having worked with Margaret Easley.

US actress Natalie Portman has an Erdős–Bacon number of 7. She collaborated (using her birth name, Natalie Hershlag) with Abigail A. Baird, who has a collaboration path leading to Joseph Gillis, who has an Erdős number of 1. Portman appeared in A Powerful Noise Live (2009) with Sarah Michelle Gellar, who appeared in The Air I Breathe (2007) with Bacon, giving Portman a Bacon number of 2 and an Erdős number of 5.

British actor Colin Firth has an Erdős–Bacon number of 7. Firth is formally credited as co-author of a neuroscience paper, "Political Orientations Are Correlated with Brain Structure in Young Adults", after he suggested on BBC Radio 4 that such a study could be done. Another author of that paper, Geraint Rees, has an Erdős number of 5, which gives Firth an Erdős number of 6. Firth appeared with Kevin Bacon in Where the Truth Lies, so his Bacon number is 1.

# Others

Hank Aaron, a baseball player, could be considered to have an Erdős–Bacon number of 3, as he and Erdős both autographed the same baseball (for which he is jokingly referred to as having Erdős number of 1), and he also appeared in Summer Catch with Susan Gardner, who was in In The Cut, with Kevin Bacon.