

On TechRepublic: The 5 worst things to do in a meeting [Log in](#) | [Sign up](#) | [Why join?](#)



Search: News [Advanced search](#)

- Today on CNET | [Reviews](#) | [News](#) | [Downloads](#) | [Tips & Tricks](#) | [CNET TV](#) | [Compare Prices](#) | [Blogs](#) | [ad](#) | [Unlimited long distance \\$24.99/mo](#)
- [Business Tech](#) | [Cutting Edge](#) | [Green Tech](#) | [Wireless](#) | [Security](#) | [Media](#) | [Markets](#) | [Personal Tech](#) | [News Blogs](#) | [Video](#) | [Extra](#) | [My News](#)

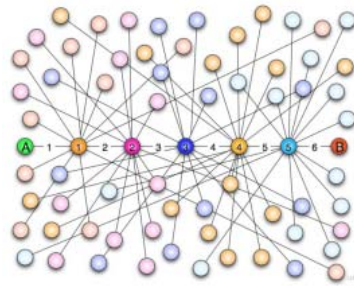
March 15, 2008 2:35 PM PDT

Proof of six degrees of separation

Posted by [Dan Farber](#)

[Post a Comment](#)

In a research paper from June 2007, titled "Worldwide Buzz: Planetary-Scale Views on an Instant-Messaging Network (PDF)," Eric Horvitz of Microsoft Research and Jure Leskovec of Carnegie Mellon University analyzed 30 billion conversations among 240 million people using Microsoft Instant Messenger in June 2006. It turned out that the average path length, or degree of separation, among the anonymized users probed was 6.6.



(Credit: Wikipedia)

[Six degrees of separation](#) posits that a person is a step away from people they know and two steps distant from people known by the people they know--thus the magic number six.

Following is a more in-depth explanation of the phenomenon from an [updated version of the research \(PDF\)](#) posted on [arXiv.org](#):

We present a study of anonymized data capturing a month of high-level communication activities within the whole of the Microsoft Messenger instant-messaging system. We examine characteristics and patterns that emerge from the collective dynamics of large numbers of people, rather than the actions and characteristics of individuals. The dataset contains summary properties of 30 billion conversations among 240 million people. From the data, we construct a communication graph with 180 million nodes and 1.3 billion undirected edges, creating the largest social network constructed and analyzed to date. We report on multiple aspects of the dataset and synthesized graph. We find that the graph is well-connected and robust to node removal. We investigate on a planetary-scale the oft-cited report that people are separated by "six degrees of separation" and find that the average path length among Messenger users is 6.6. We also find that people tend to communicate more with each other when they have similar age, language, and location, and that cross-gender conversations are both more frequent and of longer duration than conversations with the same gender.

Via [Roland Piquepaille](#) on ZDNet

See also *Nature*, "Six Degrees of Messaging"

TOPICS: [Microsoft](#), [Social networking](#)

TAGS: [six degree of separation](#), [Microsoft Research](#), [social networking](#)

BOOKMARK: [Digg](#) | [Del.icio.us](#) | [Reddit](#)

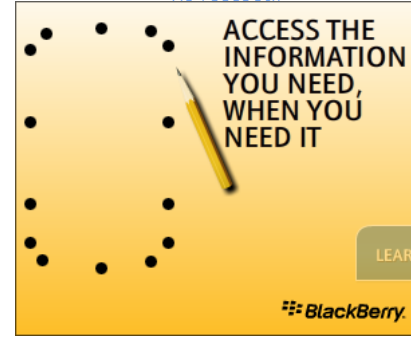
[ADD A COMMENT](#) ([Log in or register](#))

9 Comments (Page 1 of 1)

by [henebry](#) March 15, 2008 5:06 PM

Worth noting that this confirms the "six degrees" thesis in its academic form, rather than in the form popularized by John Guare's play. In the play, everyone in the world is hypothesized to be separated by no more than six degrees of separation. That's a far cry from the claim that the

[Ad Feedback](#)



About Outside the Lines

Dan Farber is the editor in chief of CNET News. He has covered technology for more than two decades, and previously served as editor in chief of ZDNet, PCWeek and Macweek. Outside the Lines explores the intersection of business and technology.

[Subscribe to this blog](#)
Click this link to view this blog as XML.

Add this feed to your online news reader

- [Add to Google](#)
- [Add to my Yahoo](#)
- [Add to MSN](#)
- [Add to Bloglines](#)
- [Add to Newsgator](#)

Outside the Lines topics

- [Apple](#)
- [Enterprise 2.0](#)
- [General](#)
- [Google](#)
- [Microsoft](#)
- [Mobile](#)
- [Open source](#)
- [Personal Tech](#)
- [Semantic Web](#)
- [Social networking](#)
- [Software](#)
- [Web 2.0](#)
- [Wireless](#)
- [Yahoo](#)

Latest blog posts from News.com

- [YouTube outage in China may be related to Tibet crackdown](#)
Posted in News Blog by Steven Musil
March 16, 2008 5:13 PM PDT
- [Yahoo showing signs of life, albeit too late](#)
Posted in Coop's Corner by Charles Cooper
March 16, 2008 10:48 AM PDT
- [Mastodon skeleton up for auction on eBay](#)
Posted in News Blog by Jennifer Guevin
March 15, 2008 6:51 PM PDT

average separation is six degrees. There's undoubtedly a long tail in the bell curve, with a maximum separation far more than six.

[Reply to this comment](#)

by [ubbn01](#) March 15, 2008 8:24 PM

The other problem in this study is that all those studied had to have a computer, or at least access to one and a Microsoft Messenger account. This only proves the hypothesis in this particular group and has no bearing at all on the huge group of people in the world not linked to the internet, or for that matter, those, like myself, that don't use instant messaging.

[Reply to this comment](#) | [View reply](#)

by [johnericanderson](#) March 16, 2008 4:47 AM

Also note this is a very specific subset of the population that are connected via IM.

This study DOES prove:
People that are connect to each other, are connected to each other.

[Reply to this comment](#)

by [blueshore](#) March 16, 2008 7:51 AM

It also proves that given at least a common element in a close system, there is a [n] degree of separation.

[Reply to this comment](#)

by [ghostofitpast](#) March 16, 2008 10:02 AM

I could care less about John Guare. What matters is that all this work grew out of Stanley Milgram's research into the "small-world problem." Given that he reviewed the results of this study in the May, 1967 issue of PSYCHOLOGY TODAY, one can hardly call him an obscure source! The absence in the Bibliography of this article, anything from the more scholarly literature, or, for that matter, anything relevant material of substance from the twentieth century strikes me as how pathetically (pathologically?) narrow current research has become. Milgram's work is as valuable for his methodological approach as it is for the results that have seized our attention for over forty years!

[Reply to this comment](#) | [View reply](#)

by [yorickjts](#) March 16, 2008 2:21 PM

and what about Kevin bacon?

[Reply to this comment](#)

by [wpaven](#) March 16, 2008 3:44 PM

While its great they were able to do this analysis on such a large dataset, it's really academic. Sociologists have been studying Milgram for quite some time now and this experiment's been repeated more times that one can count, just maybe with not a dataset so large. This post kind of bugged me as it seems to say that because MS performed the 6 degrees experiment and got the results expected, the research for all has now been legitimized somehow, as it wasn't before for some reason. The truth is, that 6 degrees has been shown again and again to be an upper bound. This article is great PR and spin for them, but I think a first year Sociologist at Stanford could come up with something similar. On another note, now that they've captured that network, it will be interesting to see what R&D they can generate off of all those nodes.

[Reply to this comment](#)

[Register to submit a comment](#)



[Gossip: Facebook's rumored IM service involves Social.IM acquisition](#)

Posted in [The Social](#) by [Caroline McCarthy](#)
March 15, 2008 4:44 PM PDT



[Global smackdown against cyber piracy now includes Japan](#)

Posted in [Coop's Corner](#) by [Charles Cooper](#)
March 15, 2008 3:30 PM PDT

Featured blogs

[Beyond Binary](#) by [Ina Fried](#)

A look at how technology is changing our lives and at the people behind all that life-changing stuff.

[Coop's Corner](#) by [Charles Cooper](#)

Charles Cooper weighs in on Silicon Valley hijinks, and he doesn't suffer fools gladly.

[Defense in Depth](#) by [Robert Vamosi](#)

Covering the latest in computer viruses and computer crime.

[Geek Gestalt](#) by [Daniel Terdiman](#)

At the tech culture nexus of video games, fire art, and virtual worlds.

[Green Tech](#)

Fresh green tech news and commentary.

[One More Thing](#) by [Tom Krazit](#)

Tom Krazit takes on the tech phenomenon that is Apple, and keeps a close watch on the chip industry.

[The Iconoclast](#) by [Declan McCullagh](#)

Exploring the intersection of politics and technology.

[The Social](#) by [Caroline McCarthy](#)

Exploring all facets of social media and tech culture.

[Underexposed](#) by [Stephen Shankland](#)

Coverage of digital photography, science, and open-source software.

[More CNET blogs >](#)

Resource center from News.com sponsors

[SF Giants CIO Bill Schlough discusses new technology upgrades at AT&T Park](#)

Watch the CIO Vision Series Video

[Ad Feedback](#)

Save ^{up to} \$300 a Year*
On Your Phone Bill!

Over 20 Premium Features
Included at No Extra Cost

Vonage
A Better Way to Phone
For Less

Already have an account? [Log in now](#)

Join the CNET community

To continue, we ask that you first complete the free registration.

Choose a username

E-mail address

Choose a password (6 characters minimum)

Retype password

I agree to CNET's [Terms of Use](#)

CONTINUE

[Need help? »](#)

Powered by [Jive Software](#)

Recent posts from Outside the Lines

[Flickr Video beta due in April](#)

[We'll miss Russell Shaw](#)

[Proof of six degrees of separation](#)

[Revisiting Apple's iPhone strategy](#)

[What if Apple really opened up the iPhone?](#)

Sponsored Links

(about)

["2008 Diet Of The Year:"](#)

Finally, A Diet That Really Works! As Seen On CNN, NBC, CBS & Fox News

www.wu-yisource.com

[Kevin bacon](#)

Browse a huge selection now. Find exactly what you want today.

www.ebay.com

[Fix Windows XP](#)

Fix PC. Remove Errors. Clean System Complete Scan. Takes 6 Mins.

www.errorsmart.com

[6 Degrees Group Linked-In](#)

Join Six Degrees of Separation Networking Group on Linked-in

www.tomhcanderson.com

[Free Online Chat](#)

5,000+ Members Near You. Start Chatting With Them For Free!

truechats.net

[Site map](#) | [Help center](#) | [Corrections](#) | [Newsletters](#) | [Send tips](#) | [News.com mobile](#) | [Content licensing](#) | [RSS feeds](#) | [XML](#)

Search: News

Popular topics: [CES](#) | [Drivers](#) | [Games](#) | [IE7](#) | [iPhone](#) | [iPod](#) | [iPod Nano](#) | [iPod Touch](#) | [iTunes](#) | [Leopard](#) | [Macworld](#) | [Nintendo Wii](#) | [PS3](#) | [Spyware](#) | [TVs](#) | [Vista](#) | [Xbox 360](#)



[CNET.com](#) | [About CNET](#) | [Today on CNET](#) | [Reviews](#) | [News](#) | [Compare prices](#) | [Tips & Tricks](#) | [Downloads](#) | [CNET TV](#)

Popular on CNET Networks: [Akon](#) | [Free Music Downloads](#) | [Game Cheats](#) | [Heroes](#) | [Margarita recipes](#) | [PC Games](#) | [Prison Break](#) | [PS3](#) | [Recipes](#) | [Wii](#) | [Xbox 360](#)

[About CNET Networks](#) | [Jobs](#) | [Advertise](#) | [Partnerships](#) | [Site map](#)

Visit other CNET Networks sites:

Copyright ©2008 CNET Networks, Inc. All rights reserved. [Privacy policy](#) | [Terms of use](#)