Science & Technology

It’s a Small World After E-mail

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The concept of “six degrees of separation” posits that anybody in the world can be connected to anybody else by a chain of about six. Though the theory has become popular enough to provide the title for John Guare’s 1990 play and to inspire a game based on actor Kevin Bacon’s career, it has been considered empirically tenuous. This past summer, Columbia researchers used the global reach of e-mail to put the theory to the test.

Through their Small World Project, Associate Professor of Sociology Duncan J. Watts, along with associate research scientist Peter Dodds and doctoral student Roby Muhamad, estimated that the median length of a chain was five to seven steps. They did this by assigning each voluntary participant in the project—24,163 of them, from 166 countries—to reach one of 18 target persons in 13 countries through intermediaries. Though only 384 chains completed, the team was able to estimate how long the incomplete chains would have been if they had continued to their targets. The results were published in the August 8 issue of Science.

The Small World Project picked up on the work of Harvard psychologist Stanley Milgram. In 1967, Milgram assigned 96 people in Omaha, Nebraska, chosen at random, to send a letter to a stockbroker in Boston. Since it was highly unlikely that any of the 96 knew the stockbroker, they were asked to send the letter to someone who they thought would be able, in some way, to get the letter to him. Milgram found that the average length of the chain was six. Having established a more empirical basis for the “six degrees” hypothesis, Watts now wants to pursue more algorithmic research on the subject of social networks. The new project will assess how people use their networks, rather than measure the degrees of separation between individuals. This time, the research team has almost twice as much data on each participant, allowing it to delve into details of the individual networks.

The implications of this research are considerable, according to Watts. How individuals navigate through their social networks, for example, could shed light on

how firms innovate or survive catastrophes, and how people find jobs or other kinds of resources.

“We know the chains between people are short,” he said. “We want to know why they’re short and what people are actually doing. We want to know what they’re thinking when they make their choices.”

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