

BY DAVID PAIK, PhD

The Active Transport of Ideas

How ideas spread gets at the very fabric of scholarly research and has been studied from many different angles.

Many studies examine person-to-person connectivity in social networks. Within a social network, the average path length between any two people is a key concept. By asking participants in Omaha or Wichita to mail chain letters that would get closer to selected recipients in Boston, Milgram's classic 1967 small world experiment demonstrated the six degrees of separation concept. Movie buffs have created a board game using this concept called the Six Degrees of Kevin Bacon and those interested in mathematical genealogy have adopted Erdős Numbers linking researchers by co-authorship to the prolific mathematician **Paul Erdős**.

However, a small world is not necessarily a robust world. In addition to path lengths, the connectedness between different parts of the social network is an important measure. A recent *Journal of the American Medical Informatics Association* paper by **Bradley Malin, PhD**, and **Kathleen Carley, PhD**, examines the connection between editorial boards of medical informatics and bioinformatics journals to describe the fragility of links between these two sister fields.

There are also many ways to examine the spread of ideas more broadly. The Rogers theory of diffusion of innovation states that depending on when they adopt new ideas, people form a bell curve as either innovators, early adopters, early majority, late majority or laggards and that the innovation penetration forms an S curve over time. The five stages are awareness of the innovation, persuasion of the value of the innovation, decision to adopt the innovation, implementa-



tion of the innovation and confirmation of the value of the innovation. Although broadly meant to describe the cultural spread of ideas and technology, it applies well in the narrower context of academic research. While the last four stages are well covered by traditional research activities, it is the initial stage of becoming aware of new ideas from far afield that is often the rate limiting factor and the least formalized in research.

As a great believer in the power of cross fertilization, I think that diffusion is too passive a metaphor; I prefer instead to think in terms of the active transport of ideas and places where I can search out sources that facilitate long range transport.

I've recently found inspiration for orthogonal thinking from several unconventional sources. The TED (Technology, Entertainment, Design) Conference features a diverse set of inspiring speakers and is podcasted on the web. Edge Foundation is a web-based publication that includes the World Question Center annually featuring a grand yet simple question asked of numerous notable scientists. On the more focused topic of biomedical computation, the NIH Biomedical Computing Interest Group hosts webcast seminars, book clubs, tutorials and brainstorming events.

Although things are changing, academia is still hampered by the inertia of traditional boundaries between disciplines that form unintentional energy barriers against the diffusion of ideas. Just as a retreat or a sabbatical can provide a refreshing perspective, a foray into some areas that may seem off topic can also provide a little dose of hybrid vigor to one's work. □

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DETAILS

Technology, Entertainment, Design (TED) Conferences: <http://www.ted.com>

Edge Foundation: <http://www.edge.org>

NIH Biomedical Computing Interest Group: <http://www.nih-bcig.org>