

# Connections: The Nature of Networks

## A New Science Exhibition

Stephen Miles Uzzo  
New York Hall of Science  
47-01 111th Street  
Flushing Meadows Corona Park, New York 11368  
+1.718.699.0005 x377  
suzzo@nyscience.org

### ABSTRACT

Public understanding of how networks function and evolve is becoming increasingly important to the lives of global citizens. It may provide a breakthrough in the ability of policy-makers, teachers, voters, and public planners to grasp the complex relationships in evolutionary, ecological, social, and economic systems. "Connections: The Nature of Networks," (NSF Award No. 0229268) is a unique public exhibition about networks of all kinds with a concentration on complex networks, including social networks, biological networks, communications networks and others. It was designed by the New York Hall of Science and installed opened in November, 2004 as part of a major expansion project sponsored by the City of New York.

"Connections . . ." explores the fundamental structures of networks and how they manifest themselves in what we see around us, providing visitors with tools to understand similarities and differences among various kinds of networks: how is the human brain like and unlike the World-Wide Web? How is the social network of a human community like and unlike that of an ant colony? How is the Internet like or unlike a river network? Because complex networks have the attribute of emergent behavior, the theme of emergence, the emergent nature of networks, and how they form and function in natural and human systems is an important part of the exhibition. The exhibition includes experiences on network structures and patterns of behaviors: such as how nodes, links, and hubs form in dynamic networks; in particular the scale-free behavior of hubs in accumulating links and isolating nodes.

The exhibition consists of 3 major components: a hands-on public exhibition, the Connections Discovery Lab (a classroom for teacher training, after school programs, and summer camp programs), and the Connections Learning Center, an expansive learning space in which information, books, games, and web resources are available in an informal, flexible setting. It also includes a programmable demonstration area and training for teachers to help them integrate complex network concepts into their teaching. An important educational goal of the exhibit is to provide visitors with an opportunity to understand that there is a way of looking at the world in terms of interactions and behaviors which can provide valuable insights into social and biological structures and relationships, which are otherwise elusive.

This paper will provide an overview of how the exhibition and other resources were planned, executed, and evaluated; as well as explore some of the problems inherent in communicating science of networks concepts to lay audiences. It will also provide an overview of the summative evaluation of the exhibition and some possible research areas for the future.