Networks and Games

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Abstract. The Internet is the first computational artifact that was not designed by a single entity, but emerged from the complex interaction of many. As a result, it must be approached as a mysterious object, akin to the universe, the brain, the market, and the cell, to be understood by observation and falsifiable theories. The theory of games promises to play an important role in this endeavor, since the entities involved in the Internet are interacting selfish agents in various and varying degrees of collaboration and competition.

We survey recent work by the speaker and collaborators considering networks and protocols as equilibria in appropriate games, and trying to explain phenomena such as the power law distributions of the degrees of the Internet topology in terms of the complex optimization problems faced by each node.

Biography: Christos H. Papadimitriou is C. Lester Hogan Professor of Computer Science at UC Berkeley. Before Berkeley he taught at Harvard, MIT, Athens Polytechnic, Stanford, and UCSD. He has written four textbooks and many articles on algorithms, complexity, and their applications to optimization, databases, AI, economics, and the Internet. He holds a PhD from Princeton, and honorary doctorates from ETH (Zurich) and the University of Macedonia (Thessaloniki). He is a member of the American Academy of Arts and Sciences and of the National Academy of Engineering, and a fellow of the ACM. His novel Turing (a novel about computation), was published by MIT Press in 2003.