To Each According to its Degree: The Meritocracy and Topocracy of Embedded Markets

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Abstract

A system is said to be meritocratic if the compensation and power available to individuals is determined by their abilities and merits. A system is topocratic if the compensation and power available to an individual is determined primarily by her position in a network. Here we introduce a model that is perfectly meritocratic for fully connected networks but that becomes topocratic for sparse networks-like the ones in society. In the model, individuals produce and sell content, but also distribute the content produced by others when they belong to the shortest path connecting a buyer and a seller. The production and distribution of content defines two channels of compensation: a meritocratic channel, where individuals are compensated for the content they produce, and a topocratic channel, where individual compensation is based on the number of shortest paths that go through them in the network. We solve the model analytically and show that the distribution of payoffs is meritocratic only if the average degree of the nodes is larger than a root of the total number of nodes. We conclude that, in the light of this model, the sparsity and structure of networks represents a fundamental constraint to the meritocracy of societies.