

Analysis of a relationship triangle

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In a model network of friends and foes, relationships will evolve until everyone becomes friendly or the network splits into two hostile factions, researchers suggest in the current issue of the *Proceedings of the National Academy of Sciences*.

Jon Kleinberg and colleagues used mathematics and [computer simulations](#) to analyze an existing model that examined adages about relationship triangles, such as "the friend of my friend is my friend" and "the enemy of my friend is my enemy."

The researchers mathematically demonstrated that as the relationships within individual triangles changed in accordance with the model, the [network](#) as a whole evolved either to a state of two intractably opposed camps, or to global harmony.

The end result depended upon the average extent of friendliness in the initial network.

The researchers applied their theoretical findings to actual historical events, including the split between Allied and Axis nations during World War II.

Using the countries' propensities to work together as a starting point, the model correctly predicted the eventual Allied-Axis alignment for all countries except Denmark and Portugal.

The model could help researchers determine the outcomes of other

conflict-driven divisions, such as election races between opposing political parties or competition between two groups of companies in a common industry, the authors suggest.

More information: "Analysis of a continuous-time model of structural balance," by Seth Marvel, Jon Kleinberg, Robert Kleinberg, and Steven Strogatz, *Proceedings of the National Academy of Sciences*.

Provided by Proceedings of the National Academy of Sciences

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