(Lusher, Koskinen, and Robins 2013)

Lusher, Dean, Johan Koskinen, and Garry Robins. 2013. “Formation of Social Network Structure.” In *Exponential Random Graph Models for Social Networks*, edited by Dean Lusher, Johan Koskinen, and Garry Robins, 16–36. Cambridge: Cambridge University Press.

Lusher, Koskinen, and Robins assert that the network structure is a product of the social process that produced it and cannot be assumed to be known a priori (2013, 41).

Standard statistical approaches assume independence of observations, but humans are intentional beings with multiple motivations for and expressions of social action (Lusher, Koskinen, and Robins 2013, 19–20). Many social processes occur simultaneously. Exponential Random Graph Models (ERGMs) incorporate dependency between network ties. These tie-based models permit an understanding of the complex combination of social processes by which network ties are formed (Lusher, Koskinen, and Robins 2013, p. 103).

Certain network patterns are important based on specific social science theories: adopting a particular dependence hypothesis and definition of local configurations (Lusher, Koskinen, and Robins 2013, 19).

“In the structural theory of social influence, a process in which a group of actors weigh and integrate the conflicting influences of significant other within the context of social structural constraints.” (Lusher, Koskinen, and Robins 2013, 103)

Network ties organize themselves into patterns because the presence of some ties encourages others to come into existence (Lusher and Robins, 2013).

Local structures in

Markov dependence assumption:

k-star

4-cycle the presence of existing relationships creates the conditions whereby an old friend tie affects the chances of a new friendship. “social circuit dependence (Lusher and Robins 2013).

(Lusher and Robins 2013) transitivity is closing the path, forming a third tie that produces a triangle. Also called network clustering in undirected. forming triads (Lusher and Robins 2013). from the social network theory that humans social propensity to operate in group like structures (Lusher and Robins 2013). a triangle of three is a simple archetypal expression of a small group. Many triangles together form clique-like structures forming a community, cohesive subgroups (Lusher and Robins 2013). Transitive triad where one node is receiving two ties and sending none. cyclic triad where the direction of all ties is consistent so that they for a 3-cycle (Lusher and Robins 2013).

Transitivity or path closure from Markov dependence where ties are assumed dependent if they share a node (Lusher and Robins 2013, p. 60).

Geometrically weighted degree parameters helps with phase transitions involving star parameters.