The Dual Clustering of Tastes and Ties: Network Motifs for Cultural Consumption

Keywords: Cultural Consumption, Network Dynamics, Multilevel Networks, Two-Mode Networks, Stochastic Actor-Oriented Model (SAOM)

Extended Abstract

Cultural tastes are conspicuously social. Cultural cues set the stage for interactional norms, cultural preferences convey one's values and identities, and cultural markers signify one's social status (e.g., [1, 3]). As a result, individuals often cluster around those who share similar cultural tastes. Cultural sociologists have long conceptualized such dual clustering of persons and cultural groups [2]. Yet, despite its theoretical importance, little empirical research has articulated where and how such dynamical linking of tastes and ties come about. For instance, current research on the link between personal tastes and social ties has mostly relied on population-level survey data, providing a broad-stroke picture of the non-random patterning of tastes and ties [7, 8]. Thus we still know little about how boundaries defined around cultural categories are maintained, consolidated, or eroded by relational mechanisms.

In contrast, network studies of diffusion of cultural tastes either uses stylized simulation models [3] or has a single-minded focus on how dyadic processes, such as selection and influence, contribute to global cultural differentiation and homogenization [6, 5]. This line of work overlooks the relational structure where cultural items are embedded (see an exception in [4]). Thus it still remains an open question how an actor-based network model could (re)produce the relational structure inherent in cultural tastes.

We argue that a key step for bridging these two strands of literature is to conceptualize the dynamic linkings of persons and ties as a multilevel network consisting of interlinked individuals and interrelated cultural items [2]. Such a framework allows us to treat personal tastes and social ties as interdependent and look for basic structural elements that characterize such a socio-cultural system. We define those basic structural elements as "network motifs" of cultural consumption [9] — recurring, significant patterns of interconnections that characterize the non-random coupling of individuals' cultural preferences and their social ties.

We propose two types of such motifs (see illustration in Table 1): (a) degree-based measures that quantify actors' cultural profiles and genres' structural features [8], and (b) triadic and quadric structures that quantify the social and structural embeddedness of genres [10] in a two-mode multilevel network. Given those network motifs, we demonstrate how actor-based network mechanisms could reproduce the emergent relational web that defines the clustering of cultural categories and identify the model that best explains the dynamical linkings of personal tastes and social ties.

In an analysis of longitudinal data collected among a cohort of university students (N=253), on their peer networks, and musical preferences, we first use those proposed network motifs to quantify the distributional features of the evolving socio-cultural system. We then specify and estimate Stochastic Actor-Oriented Models (SAOMs, [11]) to model the co-evolution of friendship ties and the two-mode network of music preferences, accounting for multiple micro network processes (such as selection and influence). Drawing from the simulations based on our model, we assess how well our model re-produces the dynamic coupling of tastes and ties by comparing the simulated and the empirical counts of those network motifs (see goodness-of-fit plots in Figure 1). Our findings suggest that, even when micro network processes that are commonly assumed to produce cultural differentiation (such as selection and influence) turn out to be weakly significant, the joint workings of multiple network processes still reproduce the characteristics of the socio-cultural system relatively well when compared to a naive baseline (see Figure 2 and 3). Finally, we compare our findings with previous work and discuss the usefulness of considering network motifs as a potential bridge between micro behavioral processes and structural patterns of cultural consumption.

Our work contributes to the sociological study of cultural tastes by providing an empirical case for how the dynamical linkings of culture and social relationships emerge and evolve. We argue that network motifs serve as the building blocks for understanding such a dynamic socio-cultural system and for understanding the social foundations for cultural tastes. Our work further contributes to network studies of cultural diffusion by illustrating a multilevel framework that treats network processes (such as selection and influence) and the relational structures of cultural categories as interdependent and mutually embedding.

References

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Tables and Figures

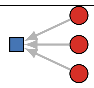
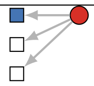
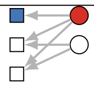
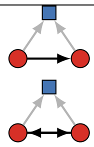
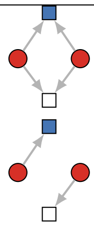
Motifs	Representation	Interpretation
Popularity		the indegree of a genre
Genre Omnivoresness		the average outdegree of genre audience
2nd-order Popularity		the average popularity of genres chosen by genre audience
Social Embeddedness		N of (reciprocated) closed triads embedding a genre
Structural Embeddedness		N of four-cycles embedding a genre N of disjoint pairs embedding a genre

Table 1: **Overview of Network Motifs for Cultural Consumption in a Multilevel Two-Mode Network.** Blue squares represent the focal genre; red circles represent the focal individuals; grey arrows indicate music preferences; and black arrows indicate friendship ties.

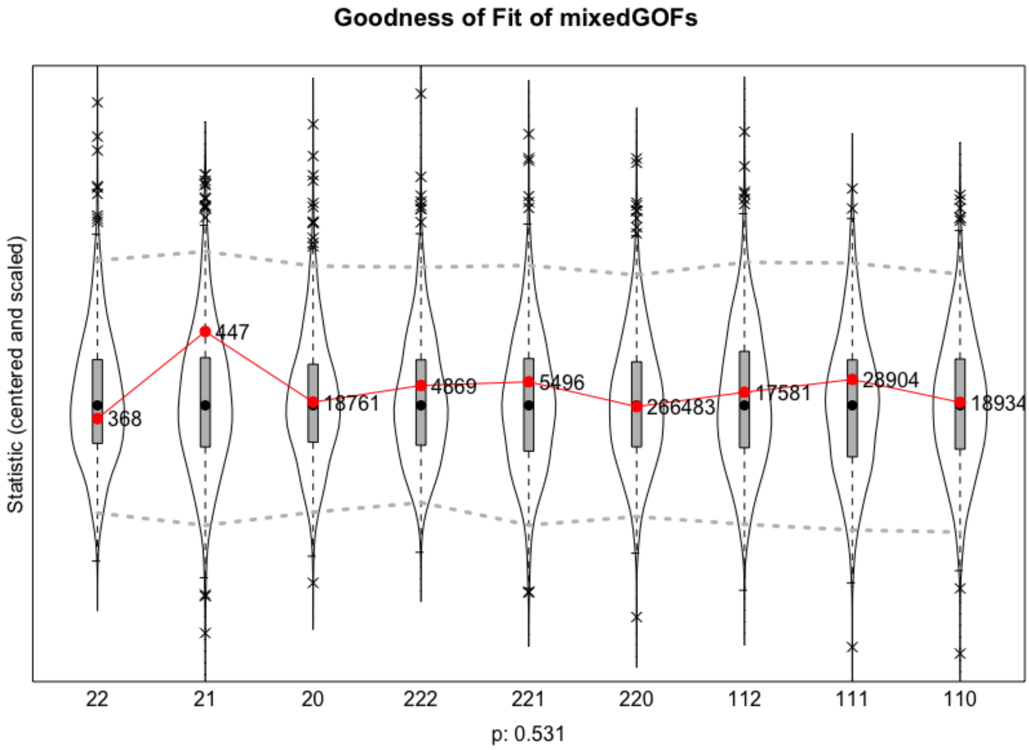
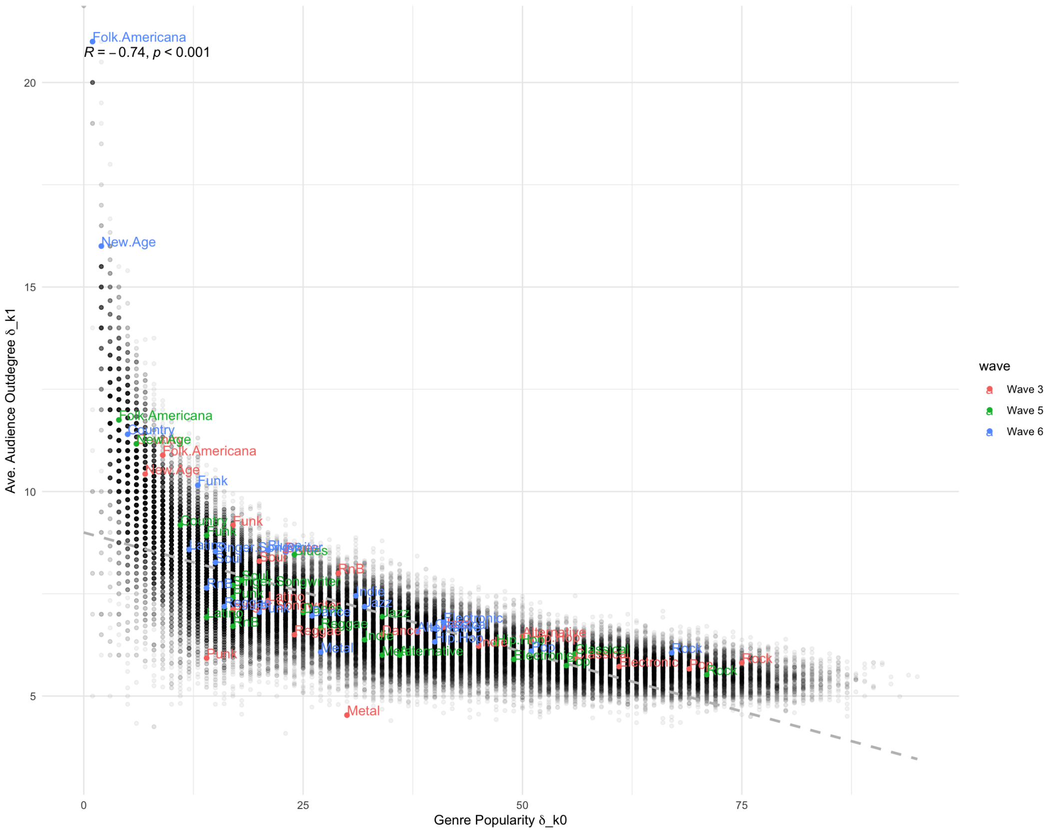
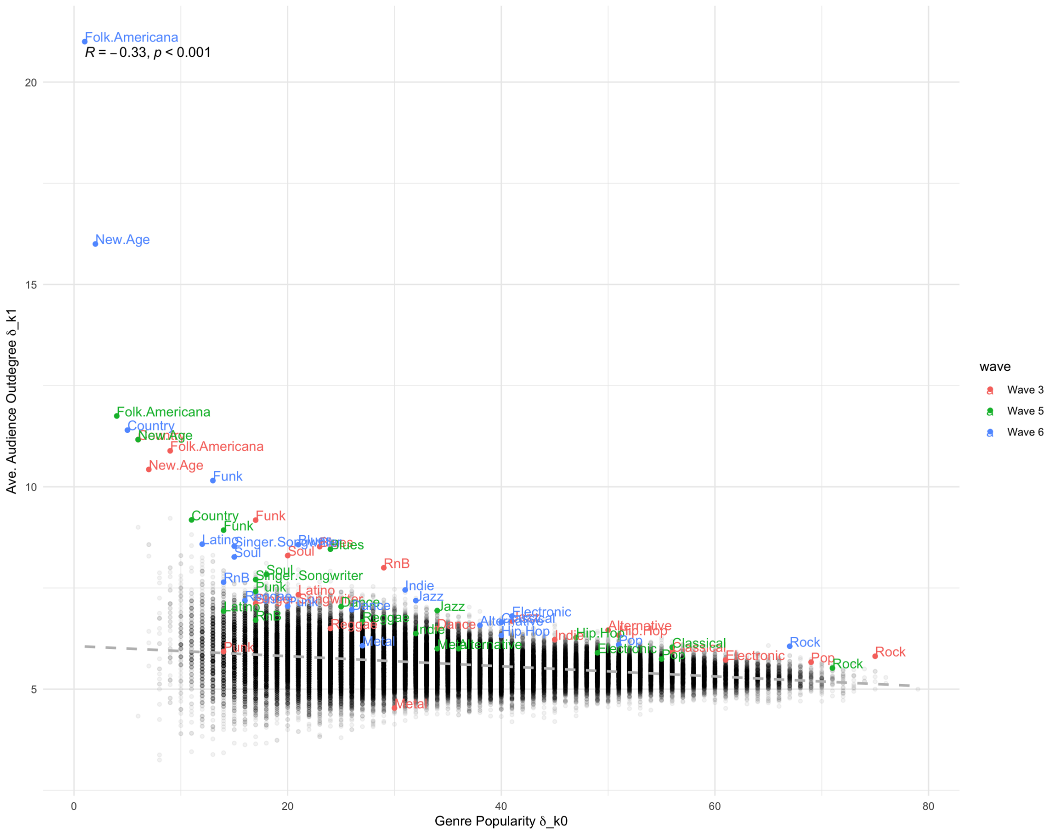


Figure 1: **Goodness-of-Fit Violin Plots of Triadic and Quadric Structures.** Social embeddedness is represented by triad type 21 and 22; and structural embeddedness is represented by quad type 220 and 110.

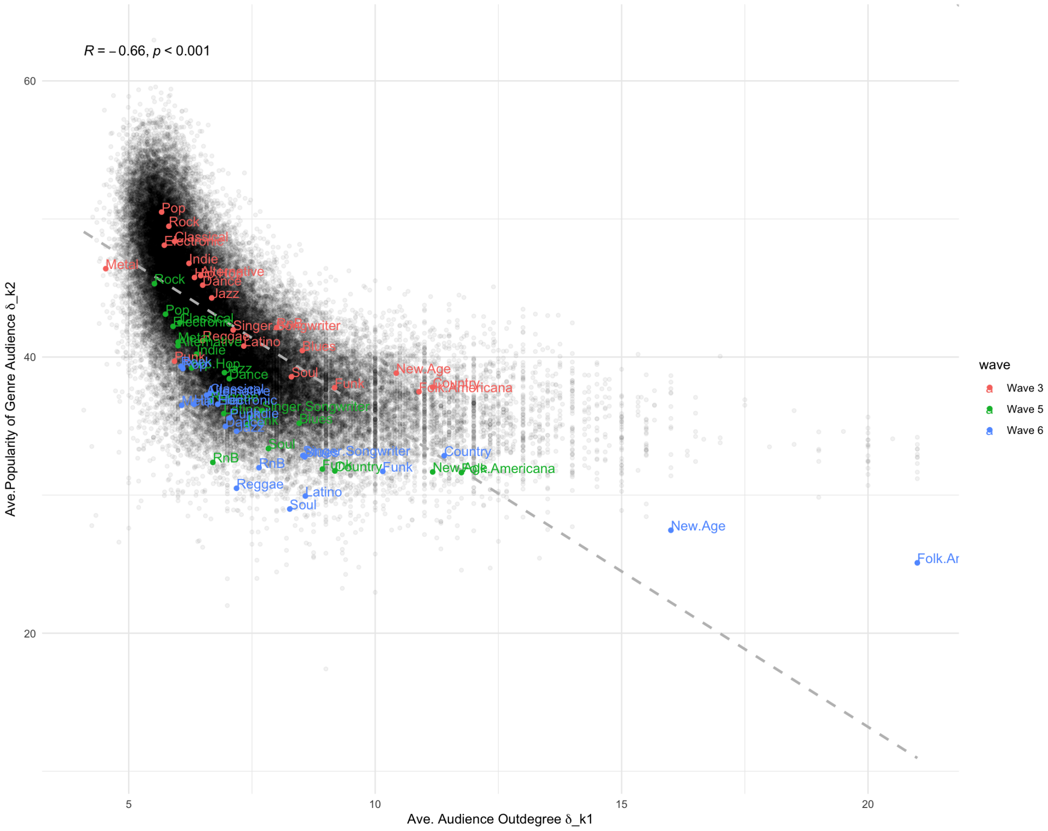


(a)

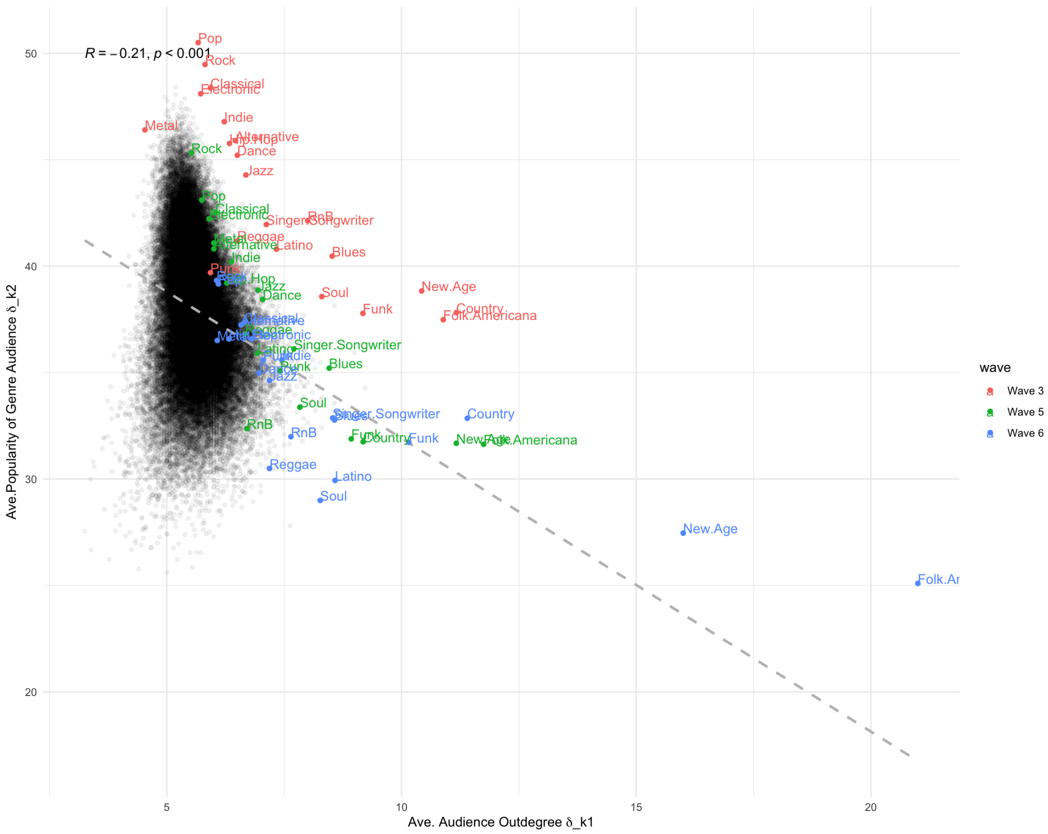


(b)

Figure 2: **Comparing Simulated and Empirical Correlations of Genre Popularity and Genre Omnivoresness.** Simulated values are shown with black dots; and empirical values are shown in colors by waves. Plot (a) is based on simulations from SAOM and shows a better fit of the data than simulations based on degree-preserving permutations shown in plot (b).



(a)



(b)

Figure 3: **Comparing Simulated and Empirical Correlations of Genre Omnivoresness and 2nd-order Popularity.** Simulated values are shown with black dots; and empirical values are shown in colors by waves. Plot (a) is based on simulations from SAOM and shows a better fit of the data than simulations based on degree-preserving permutations shown in plot (b).