Movement without mobility: Adolescent status hierarchies and the contextual limits of cumulative advantage

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ABSTRACT

This paper develops a theory of interpersonal status hierarchies that builds on and challenges traditional models of cumulative advantage. Cumulative advantage models predict stability in interpersonal status hierarchies, where status is defined by asymmetries in social relationships. According to strict cumulative advantage, initial status differences are exaggerated over time, making upward or downward mobility unlikely. We argue that interpersonal status hierarchies are instead quite fluid, with individuals regularly moving up or down the hierarchy. Individual status gains do not, however, disrupt the status order as the upwardly mobile are often pulled back to their original positions. This drag of the past generates the same long run status outcomes as cumulative advantage models, but through very different means: sustained upward mobility is rare because the upwardly mobile fail to maintain their status gains, and not because initial gains are impossible. More generally, the effect of the past limits sustained mobility in most, but not all, status hierarchies, and we expect sustained mobility where ties are stable and the expectations for reciprocity are low. We test our model using longitudinal data on adolescents, finding strong support for the theory. We end the paper with a reflexive discussion about measurement error, hypothesis testing, and "messy" longitudinal network data.

1. Introduction

How is status mobility possible? Traditional sociological theories of status (e.g. Berger et al., 1974; Cook and Emerson, 1978; Gould, 2002) generally characterize mobility as the exception to the rule, citing cumulative advantage, or what Merton (1968) famously referred to as the "Matthew Effect", as the cause of enduring status inequalities (for a recent example see Rossman et al., 2010).[1] "Strict" cumulative advantage models can take a variety of functional forms (see DiPrete and Eirich, 2006 for a review) but generally describe the benefits, or returns, to holding a privileged position:

where individuals with initial advantages—whether by virtue of their own talents or serendipity—garner subsequent advantages, and are thus unlikely to lose status.[2] Low status actors, meanwhile, are unlikely to gain it. In some contexts, high status actors are also in position to alter the "rules of the game" in their favor, further cementing the advantage of the upper echelon (Bourdieu, 2004). High status actors are especially advantaged when merit is difficult to distinguish from status, such as in interpersonal status hierarchies. Cumulative advantage generates a rigid hierarchy in such settings, where mobility is extremely unlikely, yet enduring in the rare event it does occur.

Here we reverse these propositions, arguing that social mobility in interpersonal hierarchies is actually quite common, but not often lasting. Moves up or down the status hierarchy are frequent, but fleeting, as the past strongly drags the mobile back to their original positions. Our model thus arrives at the same long-term pattern

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[1] The Matthew Effect refers to high status individuals receiving more credit or prestige than their accomplishments would otherwise warrant, or as Merton (1968, p. 58) put it, "accruing greater increments of recognition for particular scientific contributions to scientists of considerable repute and the withholding of such recognition from scientists who have not yet made their mark." For empirical examples outside of the scientific domain, Rossman et al. (2010) find that high status film actors are more likely to find subsequent success, and Martin (2009) shows that youth dominance hierarchies quickly become fixed, and that dominant youths are challenged even less often than would be expected.

[2] DiPrete and Eirich (2006) show that the "Blau-Duncan" form of cumulative advantage, which attempts to explain *group*-level inequality through direct and indirect effects, does not necessarily lead to growing inequality over time—though in practice, most empirical applications seem to find growing inequality. Because our focus is on individual actors, unless stated otherwise, we focus on "strict" cumulative advantage mechanisms.

of stratification as the strict cumulative advantage model—where sustained mobility is unlikely—but through very different means. In contrast to cumulative advantage models, which predict growing inequality, or at minimum a stable status ranking, our actors make fleeting moves up and down the hierarchy before returning to their original positions. The long-term solidity of most status hierarchies belies, in our view, a great deal of movement between time points, and is achieved only through the stabilizing influence of the past. Status hierarchies are thus fluid rather than fixed, but they are also slippery.

Some status hierarchies are less slippery than others, however, providing the upwardly mobile with sufficient traction to maintain their status gains. Rather than treat sustained mobility as an anomaly, we systematically extend our theory to the contextual level, explaining why sustained mobility happens in some settings but not in others. We identify two properties of networks that facilitate lasting mobility: sustained mobility is possible in networks where ties, once made, tend to endure and where the expectations for reciprocity are low. In such settings, the upwardly mobile are unfettered from the past, free to enjoy their newly won status.

We begin the paper by discussing the centrality of cumulative advantage in sociological theory. We then move to our own theory and explain why status hierarchies are often characterized by movement without sustained mobility. We also explain why the "drag" of the past is weak, and thus sustained mobility possible, in some, but not most, contexts. We test our theory using longitudinal data on adolescents, showing in multiple contexts that the past matters, dragging aspiring social climbers back to their original positions.

Unlike most studies of network dynamics, we test our theory while recognizing the messy nature of longitudinal network data. Any study that is dependent on the reporting of particular ties to particular people is subject to sources of measurement error: individuals may report ties inaccurately or inconsistently, making it difficult to distinguish between true change and change to due error. We develop a simulation procedure to test the validity of our results. We believe this is a useful exercise. In our case, we can be confident that the results are real, but this may not be true of all studies, and one can only be sure by taking the problem of measurement error seriously.

2. Theory

2.1. Status as asymmetry

To describe the process of status change we must first define status. There are many different conceptualizations (see Martin, 2009 for a review), but most center on the idea that high status people are socially desirable and receive deference (Gould, 2002; Martin, 2009; Rossman et al., 2010). Gould operationalizes status in network terms, where high status individuals receive many nominations (or "gestures of approval" p. 1147). Research in both the status characteristics/expectations states (e.g. Cohen and Roper, 1972; Ridgeway, 1978, 1982) and social network traditions (Bukowski and Newcomb, 1984; Moody, 1999; Moody et al., 2011; Bothner et al., 2010a,b) have similarly defined status as a function of social relationships—higher status actors receive more friendship nominations (relative to lower status actors), give advice that is followed, talk more in meetings, and so on.

Asymmetric relationships are particularly useful markers of status as they imply both social desirability *and* deference. Receiving a nomination without the expectation of reciprocity establishes interpersonal leverage, and we are unlikely to see asymmetries favor lightly regarded individuals. Higher status individuals receive many nominations relative to their outdegree—in other words, ego

is high status if the demand for ego's time/attention/friendship is much greater than ego's rate of reciprocity. Symmetric relationships are of great value (e.g. because they provide social support, facilitate socialization, etc.), but they establish status distinctions, or signals of deference, to a lesser extent than asymmetric nominations. An individual thus moves up the status hierarchy by gaining social leverage, or distinctions, over a large number of people.[3] The questions are how often upwardly mobility happens and how often the upwardly mobile maintain their status gains. Below, we contrast our own answers to these questions with those based on classic cumulative advantage. Though the answers are quite different, the overall outcome—long-term stability of status hierarchies—is often the same.

2.2. Cumulative advantage and its limits

Merton's (1968) study of scientific careers spurred initial interest in cumulative advantage processes, where initial advantages—created by talent or chance—lead to subsequent advantages, thus increasing the gap between the top and the bottom over time.[4] Cumulative advantage ideas were subsequently formalized (Zuckerman and Merton, 1971; Cole and Cole, 1973; Allison et al., 1982) and applied widely as an explanation for persistent or growing inequality in political, organizational, educational, economic, and even cultural (Salganik et al., 2006) realms (see DiPrete and Eirich, 2006 and Bothner et al., 2010a,b).

"Strict" cumulative advantage models assume that future accumulation depends on the current level of accumulation.[5] In the strongest form (for growing inequality), the rate of return itself varies by the level of current accumulation; thus, the wealthy not only have more money to invest, and thus higher absolute returns, they also receive better interest rates. In scientific settings, more talented or luckier scientists enjoy ever increasing advantages over their less talented or unlucky colleagues: even when their contributions are equivalent, they are evaluated in light of past accomplishments (DiPrete and Eirich, 2006). Strict cumulative advantage also lies at the root of preferential attachment models, where new entries into a network preferentially choose people with many nominations (Barabási and Albert, 1999; Newman, 2001; Albert and Barabási, 2002).

Cumulative advantage will operate strongly when projections of future quality or merit are driven by perceptions of current quality – thus scientists with prestigious publications win grants and websites with many links receive more visibility. When quality is difficult to discern, observers must rely on current perception as a benchmark, a measure that will disproportionally reward people in advantaged positions. Thus, current status directly leads to higher future status. Yet even in a more "objective" world, individuals receive education, training, and resources based on their past performance. These resources lead to an increase in productivity, amplifying the initial advantage in perceived quality (Merton, 1988). These feedback loops make it possible for small initial

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[3] Our measure also differs from a patronage based definition, where actors in fragile positions are likely to lose status precipitously if one or more of their patrons loses status or stops their endorsement (Bothner et al., 2010a,b). Ours can be viewed as a more "democratic" conception: one cannot achieve high status by receiving many votes from a few people, but must instead receive single vote from a large number of people.

[4] We thus assume that the cumulative advantage process is "positive" so that the parameter describing the relationship between past and current accumulation is greater than 0. The full range of past events, or "shocks", thus affects the current level of accumulation. See Footnote 2 in DiPrete and Eirich (2006) for more details.

[5] We ignore, for space considerations, simple cumulative advantage models which specify a time dependence but no explicit relationship between future and current accumulation.