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Hierarchies in Motion:
Towards a Dynamic Account of Status Change

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Abstract

Theories of status hierarchy dynamics generally build on models of status hierarchy emergence, tracing which status behaviors lead to status differences. However, these models are not consistent with findings showing that status hierarchies constrain the status behaviors of their constituent members and that some status behaviors can actually limit status gain. In this paper, I develop a dynamic processual account, based on laboratory-demonstrated mechanisms, of how individuals’ status changes when their pattern of one type of status behavior—giving orders to coworkers—changes. I use continuously-collected, interactional measures of communication, advice-seeking, and order giving among 41,000 individuals in 2,400 teams and small organizations over multiple years, contextualized and deepened by four months of participant observation and 39 interviews. The findings indicate that (a) relative status more strongly constrains some status behaviors than those status behaviors shape relative status and (b) counter to theories of status hierarchy emergence, the status behavior of giving orders does not increase but rather stabilizes individuals’ status.

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Introduction

Akram: I was starting to take the lead on some of this stuff. I created some tasks, assigned some to Rebecca. And she messaged me, “you’re not my boss, don’t give me orders!” I’m more cautious with assigning tasks because that scarred me a bit: I don’t want to give the impression that I’m bossing someone around.

Akram, explaining his giving orders several months after the conflict with Rebecca: It was pretty organic, among the people on the team I definitely understood what needed to get done, so I took ownership of the process. I just gave orders to whomever needed to do something.

People who give orders in teams and organizations have empirically higher status than those who do not; alters direct more deference to leaders than they do to non-leaders and people who receive more deference are more able to issue legitimate orders (Zelditch 2001). Even order givers, however, usually begin their careers as order-takers; like Akram, they go from unable to give orders to regularly directing others’ work. How does their status change when they switch from not giving orders to giving them? Is it only those with long-established higher status that are able to give orders, does the act of giving orders further increase individuals’ status, or are status and order giving only linked indirectly through the formal bureaucracy? Do simple mechanisms, well-established in laboratory research, linking status and order giving account for such changes, or is a richer dynamic model necessary? How do people like Akram become comfortable with giving orders, and how does this interact with their status in the eyes of other group members? And what does this process tell us about how status changes more generally?

The present study pursues an unorthodox strategy to answer these questions and develop a dynamic account of how such changes unfold—an account that has proven elusive in prior work (Sauder et al. 2012). First, it establishes the empirical trajectory of how status changes
when people first begin to give orders. Second, it identifies the combination of relevant mechanisms established in prior work that can account for this trajectory. Finally, it uses ethnographic methodologies to validate and further develop the proposed combination of mechanisms.

An unorthodox strategy requires unorthodox data. Static, survey-based sociometric measures would be insufficient to explore dynamics; without prior indications of the appropriate timescale, we do not even know the necessary frequency required for longitudinal measures (Ancona et al. 2001). Relying on retrospective self-report of order giving would bias us towards formalized relations which are more easily recollected. Even with high-frequency observation, individuals’ transition from not giving orders to giving orders is a rare enough event that one would have to collect data at many organizations over a long period of time to observe enough transitions. This study uses a dataset which will allow precisely that: observing both relative status and order giving in 2,400 groups of ten or more coworkers over one to three years each, allowing measurement of 4,735 transitions into giving orders. To ground these data and aid in their interpretation, the study also uses ethnographic data collected over four months at one of the largest organizations, complementing the breadth of the larger dataset with the depth of ethnographic methods.

I find that, contrary to behavioral interchange accounts of status hierarchy emergence (Skvoretz et al. 1996; Fišek et al. 1991), individuals’ status does not increase once they begin to give orders. Rather, the data show a clear pattern of status increase for up to 20 weeks before individuals first regularly give orders. Their status then stabilizes as soon as they begin. Numerous mechanisms demonstrated in social psychological work are consistent with
this empirical pattern, but no one mechanism alone can account for it. Rather, I argue that a model of status change must take into account how both audience and ego perceptions shape behavior as well as the interaction between the two.

I propose a process model of the interaction between alters’ and ego’s perceptions to account for the observed pattern. When shifts in the pattern of work create opportunities for focal actors to give orders to a coworker (Aime et al. 2014), it entails a behavior in which these focal actors have not previously engaged. As such, they must assess (Tost 2011) whether their coworkers would view order giving as legitimate (Zelditch 2001), relying on alters’ perception of the focal actors’ status to guide the assessment (Anderson et al. 2006; Anderson et al. 2012). If they are high status already, they will begin to give orders. If they are lower status, however, they will handle the opportunity by either working harder or being indirect in the requests they make of their coworkers; either way, this conspicuous forbearance will increase coworkers’ assessment of a focal actor and hence his or her status over time (Willer et al. 2012). Finally, when focal actors assess that they have sufficient status to legitimately give orders, they will begin to give orders. Their order giving undermines the mechanisms driving status growth (Willer et al. 2012) and their status stabilizes.

This model contributes to a number of conversations in a range of literatures. First, it develops theory linking laboratory constructs of power and power-use to order-giving behaviors in the field, thereby offering a field validation of lab-demonstrated mechanisms linking power and status.

Second, by theorizing order-giving behavior in organizations, the model presented here lays the groundwork for more rigorous theorizing of authority in flat, non-hierarchical, heterarchic
(Stark 2006; Girard and Stark 2003), conversational (Turco 2016), or post-bureaucratic (Heckscher 1994) organizational forms that increasingly characterize contemporary workplaces. With increased complexity inducing more collaboration outside formally-defined structures of authority and the proliferation of organizational forms that rely less on formal authority by design, an updated understanding of informal authority is increasingly necessary.

Finally, models of status change have proven elusive in work focused on either status structures emerging from individual actions in groups of strangers (Skvoretz et al. 1996) or the effects of static status structures on individual action (Sauder et al. 2012). The dynamic account developed here shows the importance of focusing on both structure and action—on both ego behavior and alter perceptions—and of exploring the way mechanisms relevant to each group interact with one another and over time. In particular, it shows that accounts focused on status emergence may not be good models of change over longer periods of time (Bendersky and Shah 2013). The approach I develop thus acts as a model for studying status dynamics more broadly.

Theoretical Framework

Status

Status—the prestige, respect, or esteem that alters have for a focal individual—shapes the expectations those alters hold for the contribution of that individual in a task-oriented setting (Berger et al. 2014). In a task-oriented setting, individuals try to make decisions about whose perspective or opinion is reasonable to rely on (Ridgeway and Nakagawa 2017) but face
constraints on their inference. First, in many situations, it is often unclear who has higher ability than whom. Faced with such uncertainty, people rely on whether others seem to defer or not to a focal individual in making inferences about relative ability (Gould 2002; Lynn et al. 2009). Second, even if an individual feels relatively certain in his or her assessment of an alter, they may still behave as if they share others’ indicated status beliefs in situations where the group is highly interdependent (Correll et al. 2017). Regardless of the reasons that people rely on status signals to infer ability, status distorts underlying differences in ability (Gould 2002; Lynn et al. 2009; Manzo and Baldassarri 2015). In doing so, it is a key mechanism in reproducing social inequalities (Ridgeway 2011; Sauder et al. 2012).

Status is often conceptualized either as a position in a static social structure constraining individual behavior (e.g., Anicich et al. 2015) or as a structure emerging from interactions among individuals (e.g., Skvoretz et al. 1996). Work in the latter vein demonstrates that particular status behaviors (Mark 2018)—such as giving orders or interrupting another speaker—leads to a specific ordering of status perceptions in a group of strangers (Askin et al. 2015; Skvoretz et al. 1996). Theoretical accounts of status change within existing hierarchies, rather than emergence, are rare (Sauder et al. 2012) despite the fact that social life is often neither static nor emergent. Outside of the controlled conditions of the lab, most groups’ environments are in flux and their structures enduring. A dynamic account of change must consider both. The present study focuses on one particular instance of status change to develop such an account: the change which accompanies an individual beginning to give their coworkers orders in a team or organization.
Giving Orders

By *giving orders*, I refer to a member of an organization or team publicly telling a coworker to do a particular task. Such an action requests that the target coworker adjust their course of action in deference to either the requesting individual or to the collective goals of the team or organization (Ridgeway and Nakagawa 2017). Order giving, as I use it here, does *not* necessarily reflect the formal hierarchy of the organization. The nature of work in complex organizations often brings together people from different functional areas such that formalized manager-subordinate relationships are not defined or able to guide order-giving behavior (Heckscher 2007; Heckscher and Adler 2006). Furthermore, even when orders have a formal basis, relative status can still shape who is able to give orders without generating conflict (Anicich et al. 2015).

In addition to offering empirical traction on studying status change, order giving is an important organizational behavior in its own right. The shift from only taking orders to having some authority over coworkers is the largest shift in relative authority that individuals will face in their careers (Tannenbaum et al. 1974) and has been implicated as a major factor in the reproduction of class, race, and gender inequalities (Wright 1994; Wright et al. 1995).

Order giving potentially maps onto a number of well-established laboratory constructs. However, the narrow scope of the lab, while providing strong construct validity, leaves it unclear which established lab mechanisms will be most relevant in organizational contexts (Turner 2006). Publicly telling a coworker what to do may be seen as a form of *social dominance* (Cheng et al. 2013), but does not necessarily induce the fear that dominance
usually implies. It also is a form of power use, insomuch as the order giver mobilizes some basis of organizational or resource-access power in order to justify the order. However, it is not clear that findings about power operationalized as advantage in an exchange network (Cook and Emerson 1978) extends to order giving in organizations.

Finally, in recent organizational behavior research, order giving has been modeled as a dimension of indices of leadership behavior (DeRue et al. 2015) or power expression (Aime et al. 2014). For example, Aime et al. (2014) show that access to relevant resources predicts who expresses power (which includes order giving) in small groups. It is unclear, however, the extent to which exogenous changes in workflow and resources bear on the order-giving component of these indices as opposed to their other dimensions.

**Work Linking Status and Order Giving**

Because order giving in the wild potentially maps to multiple constructs in the lab, a range of potential mechanisms link status and order giving in the field. Figure 1 presents an overview of how each of the relevant mechanisms link status—alters’ perceptions of a focal individual—to the focal individual’s self-assessment of the legitimacy of giving orders and that individual actually giving orders to group members.

[Figure 1 about here]

**Legitimacy Judgments.** The legitimacy theory branch of the expectation states tradition (Zelditch 2001; Zelditch 2006) demonstrated that higher status serves to legitimate order giving. Recent work has reinforced this perspective, showing that order giving by lower-
status individuals, even when formally permitted, tends to provoke conflict among coworkers (Anicich et al. 2015). Because individuals have been shown to be more sensitive to the threat of status loss than the promise of status gain (Pettit et al. 2010), people may be even more inclined to avoid the risk of conflictual order giving.

**Reassessing Legitimacy.** To the extent that legitimacy—judging as correct a particular person taking a particular action—links status to order giving, it is important to consider how legitimacy assessments change. Tost (2011) proposes a three-phase model of individual-level legitimacy judgments: judgment formation, judgment use, and potential reassessment. Initial judgments can form quickly and once an individual forms an initial judgment, repeated examples of the focal individual taking the focal action are processed relatively automatically. Changing an existing judgment, however, requires a more deliberative *reassessment* mode. For the purposes of the foregoing analysis, when someone who has never given orders first considers giving orders, there may be a reassessment phase during which the focal individual or his or her alters are more attune to whether the new action—giving orders—is to be considered legitimate when performed by the focal individual.

**Self-assessment.** Anderson et al. (2006) and Anderson et al. (2012) established that people in task-oriented environments base their self-assessments—of relative ability, the rewards they deserve, and the actions it is appropriate for them to take—on their perceptions of others’ perceptions of them. In terms of the model being developed here, individuals judge the legitimacy of their own potential order giving by their status in the eyes of their coworkers, as indicated by their coworkers’ deference to them.

**Behavioral Inference (Interchange).** Behavioral interchange theory (Fişek et al. 1991;
Skvoretz and Fararo (1996) has offered influential accounts of how status hierarchies emerge among strangers. They argue that status behaviors (Mark 2018) indicating the relative status of two individuals—such as one giving an order to another—will reinforce others’ perceptions of the initiator of the action being higher status than the recipient. Regularly giving orders should increase an individual’s status in the eyes of alters as they infer that the order giver is more capable. In a recent paper, Cheng et al. (2013) argue that dominance behaviors, including bossing people around, may offer an alternative route to high status than demonstrating relative competence.

**Power Use and Power Non-Use.** Lovaglia (1995) challenges this view, having found that power does not increase deference to a powerful individual. Willer et al. (2012) and Willer et al. (2005) build on this insight, showing that using power (operationalized as advantage in an exchange network) provokes negative feelings among observers (i.e., non-targets) of the power use which in turn tempers the perceptions of competence they hold for the power user. Conversely, when someone occupies a powerful position but does not use the power, their status in the eyes of alters increases (Willer et al. 2012). Although these studies use an exchange-network operationalization of power, to the extent that giving orders in an organization is perceived by alters as a type of power use, then it would have similar impacts on status: not giving orders when one could should increase status, while giving orders may undercut further status increases.

**Long-Term Status Advantage.** Finally, some status theorizing treats individuals’ status as relatively fixed characteristics of those individuals. During a group’s initial interactions, there may be some discovery of relative status expectations, but once these expectations
stabilize they continue to shape behavior but do not themselves change. Under this view, which I term long-term status advantage, the people who are able to begin giving orders to their coworkers are those that have had higher status in a group. Because perceptions of status are shared among group members, there is little new information in order-giving behavior, thus status remains unchanged when order giving begins. Prior field studies linking status and authority have reflected and reinforced this perspective (e.g., Brass 1984; Brass and Burkhardt 1993).

The Limitations of Mechanisms Alone

These laboratory studies have many advantages: their focus on construct validity and consistency across experimental contexts has allowed for cumulative understanding of the social psychological processes underlying the causes and effects of status. However, when fitting these mechanisms into an explanation of empirical status dynamics, a few limitations become apparent.

First, status in the wild bears upon and is shaped by behaviors that do not directly map to laboratory constructs. The order-giving behavior on which the present study focuses, for instance, can be seen as a type of power-use (Willer et al. 2012; Cook and Emerson 1978), authority (Evan and Zelditch 1961), dominance (Cheng et al. 2013), or leadership behavior (DeRue et al. 2015). This multiple-mapping from construct to the empirical world reflects the narrow scope of laboratory work; for example, we know a lot about power when operationalized as a position in an exchange network where the only behavioral choices are exchange choices, but less so about whether our understanding of power extends to situations
where other behavioral options are available and other social structures bear on the exchange network.

Second, lab work observes effects that play out within the time frame allowed by the experiment. As a result, these studies tend to focus on relatively instantaneous mechanisms which limits our ability to build dynamic accounts involving duration. Finally, lab work necessarily focuses on simplified causal mechanisms linking structure and action: does status increase power use (Zelditch 2001), does power use affect status (Willer et al. 2012), or do displays of dominance increase status (Cheng et al. 2013)? When change occurs, however, mechanisms may interact with one another. Social structure may shape behavioral choices that in turn affect the structure (Barley 1986). A focal individual’s behavior may shape audience perceptions and behavior that in turn shapes the focal individual’s choices.

Putting the Mechanisms Together

As in the story of the blind men and the elephant,¹ the mechanisms above each provide a precise, but narrow, piece of understanding how status changes as order-giving behavior changes. Prior work does not tell us, however, how to fit these pieces into a coherent model of status change. The present study approaches this puzzle in two stages. First, it draws on rich interaction data to determine the empirical status trajectories of people who begin to give orders. These trajectories are used to rule out mechanisms which are contradicted by the data. They also set up the empirical pattern that must be explained by a model of status change—an approach common in the use of agent-based models to test combinations

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¹https://en.wikipedia.org/wiki/Blind_men_and_an_elephant
of laboratory mechanisms (Smith and Rand 2017). Once that pattern is established, the present study draws on ethnographic methods to combine the relevant causal mechanisms into a dynamic model and ground the features of that model in an empirical context.

**Data and Methods**

The present study uses an unprecedented combination of data to pursue this strategy. I draw on user interaction logs from a task and project-management software I refer to as TaskFlow\(^2\) to observe patterns of relative status and order giving in 2,400 organizational groups over one to three years each. In total, I measure the status of 4,735 individuals who begin giving orders for the first time. To ground these data and aid in their interpretation, I also employ ethnographic data collected over four months at one of the larger organizations, complementing the *breadth* of the larger dataset with the *depth* of ethnographic methods.

**TaskFlow Metadata**

TaskFlow is a software tool used in a wide variety of teams and organizations to coordinate task and project work. It is used to replace email for project-and-task-related communications, and so offers a convenient view into the structure and timing of collaborative work in organizations that use it. Appendix 1 presents more detail about the software itself and how it is used in teams and organizations. The dataset used in this study is the complete set of actions in the software taken by individuals in 2,400 sample organizations over a 35-month period. Some

\(^2\)Not its real name.
of the sampled organizations have multiple teams using TaskFlow; in others only a single team or department are in the data. Each data row specifies: (1) the user taking the action, (2) the task on which the action was taken, (3) the type of action taken, (4) the recipient(s) or target of the action, and (5) the action’s timestamp. All individual names, organization names, and task content had been removed from the data.

The present study focuses on the three most common user actions taken in TaskFlow: 260 million instances of a person sending a message to one or more recipients; 42 million instances of one person assigning a task to another person; and 42 million instances of one person adding another person to an existing conversation. Critically, the fact that these three types of actions require different user interactions and result in different displays in the software allows them to be used to separate indications of coworking (regular messaging) from acts of deference (adding to conversations) and order giving (assigning tasks)—interpretations which are supported by the ethnographic data described below. The analysis focuses on the 41,000 individuals in the data with at least a full year (48 weeks) of active TaskFlow use.

Participant Observation and HR Data

To ground interpretations of the TaskFlow data and inform model development, I also draw on 16 weeks of participant observation conducted while working at the pseudonymous GuestInn as a data-science intern. GuestInn operates short-term rental apartments in several North American and European cities. Each city operates as an independent business unit, managing growth and operations with support from headquarters (HQ). GuestInn’s HQ,

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3To protect GuestInn’s confidentiality, I am unable to disclose the precise number of cities in which it operates.
where I observed, houses several departments: upper management, engineering, HR, finance, interior design, supply chain management, hospitality, real estate, and recruiting.

GuestInn grew rapidly over the four years prior to my arrival, from a few employees in 2014 to 234 employees and dozens of outside contractors\(^4\) when I departed the field. This growth meant that a number of early employees had gone through a transition into giving orders. As the list of departments shows, GuestInn offers a uniquely rich research site in the wide variety of types of production—guest experience, technological, real estate, supply chain management, interior design—it incorporates.

GuestInn agreed to de-anonymize the metadata from their employees’ interactions with TaskFlow, allowing me to match the TaskFlow digital traces to my fieldnotes. This linking allowed me to field a novel interview protocol, using interactive displays of individuals’ historic TaskFlow usage to guide semi-structured questions regarding their work history at GuestInn.\(^5\)

I conducted 39 interviews with 31 different interviewees ranging from one to three hours each. Interviewees regularly spontaneously expressed recognition of the summaries of who they were working with, who they had given orders to, and from whom they had received orders. Several interviewees excitedly trace curves on the screen as they described the evolution of past relationships. I took this as reassurance that the TaskFlow data I use in the broader analysis reflects something these individuals have experienced as real.

Many of the interviews covered events that took place several years prior during rather hectic moments in people’s work lives. Having a record of whom they had been messaging with on

\(^4\)All of whom had active accounts in GuestInn’s TaskFlow system

\(^5\)The interview method is more precisely described in another study (author-identifying, n.d.). The description is available upon request.
TaskFlow at the time served to jog subjects’ memories, sometimes prompting them to dig into their own TaskFlow history to provide detailed stories about particular interactions. In particular, in interviews covering multiple years of history and potentially dozens of coworking relationships, the protocol allowed us to focus our conversations on moments of transition and on order-giving relationships.

GuestInn also provided me with a snapshot of their HR database at the time I left the field. Using these data, I could identify when transitions in formal managerial relationships occurred. I used the interview data to corroborate the dates and manager relationships in the data, manually correcting the few errors I discovered.

Methods and Measures

Qualitative Methods

I document the analysis of the qualitative data in more detail elsewhere (author-identifying, n.d.), but four particular analyses are relevant for the current study.

Adding to conversations. To confirm the validity of interpreting the act of adding someone to an ongoing conversation as an indication of deference, I coded all instances where I witnessed one person adding another to a conversation or where an interviewee mentioned adding coworkers. Over fifty such instances, I found 88% were clear indications of deference: making someone aware (38%), asking for advice or input (44%), signaling importance to others in the conversation (4%), and public thanking (4%). The remaining 12% were accidental (2%) or to initiate communication (10%), a less direct indication of
status.

Perceptions of Assigning Tasks. I coded all mentions of people’s perception of the meaning of assigning tasks. People took the act of assigning a task relatively seriously, routinely expressing discomfort at the idea of assigning a task without justification. Two people even described conflicts that had occurred when they had assigned a task to a peer in the past. Most often it was described less precisely using terms like “weird” or “I just don’t.” I corroborated that this was not unique to GuestInn in conversations with TaskFlowCo’s User Experience Research (UXR) team. They have routinely found in interviews with other TaskFlow users that people (a) see assigning a task to someone as a form of order giving and (b) are hesitant to do so without proper justification. At organizations where they have observed software use, the head of TaskFlowCo’s UXR told me, users “feel uncomfortable assigning to people.” This was a sentiment I heard repeated in conversations at GuestInn, both from potential assigners—as Akram indicated in his desire not to be seen as “bossing someone around”—and potential assignees: “I know what I’m doing so don’t need her assigning tasks saying to do this.” Observing repeated assigning behavior from one person to another indicates that this hesitance has been overcome on the part of the assigner.

Justifying Assigning. The data-driven interview protocol served to provoke justifications of task-assigning from interviewees. I inductively coded (Charmaz 2006; Saldaña 2009) these justifications and instances of assigning from my fieldnotes to classifying the reasons that people gave for giving orders and for following them. I open-coded sixteen random interviews and then iteratively grouped the codes while relating them to their original contexts until clear categories emerged of the explanations people gave for giving orders to or receiving orders
from coworkers. I then recoded the full data set. No additional categories were apparent during this stage, indicating theoretical saturation (Charmaz 2006).

Ultimately, I identified four categories of justifications. First, reference to the formal hierarchy, describing orders as given because of a manager-subordinate relationship. Second, people often made indirect reference to relative status, such as their superior task knowledge, experience, or “it was just understood.” Third, order giving was often embedded within organizational routines which included two common types of task routing routines. Finally, emergent patterns of order giving were often justified by the rights and obligations of what was locally called “ownership.” More fully exploring these is beyond the scope of this paper, but are described in more detail elsewhere (author identifying, n.d). Fewer than half of the order-giving relationships were characterized as formal. These four justifications provided the opportunities to begin giving orders but, as discussed below, did not always directly lead to starting to give orders.

Transitions. Finally, I coded all instances in interviews where interviewees recounted a transition where they began to give orders to coworkers, when a coworker began to give orders to them, or when conflict occurred about order giving. I use these data to ground my interpretation of the transition model presented below, confirm the external validity of the mechanisms it involves, and to calibrate the measures used to identify transitions.

Changes in Giving Orders

I inferred transitions into order giving from the start of repeated and imbalanced patterns of assigning between a pair of individuals anytime they work together.
To measure imbalance, I use the empirical logit (Lowe et al. 2011) to transform the number of tasks assigned from person A to person B and from person B to person A over each four-week period into a continuous scale of imbalance. When this score is above a threshold, \( \tau \), that dyad is determined to have exhibited an imbalance in assigning during that four-week period; anything below is deemed balanced. Working with identified data from GuestInn, I found that \( \tau = 0.3 \) worked best for identifying order-giving relationships recognized by GuestInn employees. Most dyads who work together (defined as having more than 8 communications each way during a period) have some amount of task assigning between them; only 12% of dyad-periods have none. However, the majority, 63%, of these dyad-weeks are balanced. The remaining 25% of dyad-periods exhibit imbalanced assigning at \( \alpha = 4 \) and \( \tau = 0.3 \).

Once a relation between two individuals has shown signs of imbalance during one four-week period, there are four states it could be in during subsequent periods: (1) maintain the imbalance, (2) revert to a balanced relation, (3) reverse the direction of imbalance, or (4) drop off in communication between them, removing the opportunity for order giving in the dyad. I use a conservative classification that labels only the first, where the direction of authority is repeated in all subsequent periods where the two work together, as an order-giving relationship. To identify the earliest week an individual transitioned into regularly giving orders, I identify the earliest week, across all of their order-giving relationships, in which they gave orders as their week of transition to order giving. Any reaction of alters to the

\[ \text{imbalance}_{AB,t} = \frac{\log(\alpha + \text{assign}_{AB,t})}{\log(\alpha + \text{assign}_{BA,t})} \]

where \( \text{assign}_{AB,t} \) and \( \text{assign}_{BA,t} \) are the number of tasks assigned from person A to person B and from person B to person A, respectively, in four-week period \( t \), and \( \alpha \) is a smoothing parameter to push the measure towards zero when there is low assigning activity in a dyad. I use \( \alpha = 4 \) in the reported analyses but also tested \( \alpha = 8 \), finding identical results, available upon request.

I also tested \( \tau = 0.6 \) and \( \tau = 1.0 \), finding substantively identical results. Results available upon request.
order-giving behavior would have to occur in that week or after.

The main results below are based on 18,380 individuals who Never regularly gave orders but were highly active TaskFlow users otherwise, 7,080 individuals who are Established order givers, and 4,735 individuals who Transition into regular order giving. The subsequent analyses focus on the latter group.

Changes in Formal Manager-Subordinate Relationships

The anonymized nature of the metadata makes it difficult to distinguish formal and informal order giving. To explore the role of formal managerial relationships in order-giving transitions, I draw on the HR data provided by GuestInn, one of the largest organizations in the main sample. I identified the specific dates when formal manager-subordinate relationships changed at GuestInn. Over the course of the study period, 698 managing relationships began, consisting of 84 distinct managers and 471 distinct subordinates (many people have had more than one manager during their tenure at GuestInn). Of the 84 distinct managers, only 24 exhibited transitions into formal authority after working at GuestInn for 16 weeks or more. The analyses of formal transitions focus on these 24 individuals. The other 60 managers began at GuestInn as managers, a common occurrence in rapidly-growing organizations (Aldrich and Ruef 2006).

Status

Status is often operationalized as network centrality. However, as Bothner et al. (n.d.) point out, interpreting centrality as status is only warranted when the network edges connote
public acts of deference. As indicated by my analysis of interview and field note data, adding someone to a task-related conversation is a reliable signal of interpersonal deference: they are being asked for advice (Blau 1955; Blau 1964; Krackhardt 1990) or someone wants to make him or her aware of a conversation. For each individual for each week, I sum the total number of times he or she was added to a conversation by someone else. All of the potential mechanisms theorize the role of alters observing an individual’s behavior, rather than the particular alter who receives the orders. To focus the status measure on the broader audience of coworkers, I remove from each individual’s sum any requests that originate from people to whom they ever regularly direct orders.

Because norms around adding may differ from organization to organization and over time, I normalized each individual’s weekly total by the organizational mean during that week. I cap outliers at five times their organizational mean,\(^8\) yielding a measure that ranges from zero to five with one indicating average status, below one indicating less than average status, and above one indicating greater than average status.\(^9\)

**Results**

Figure 2 shows the average status trajectories (with 95% confidence intervals) of Never order givers (left plot), Established order givers starting 16 weeks after their first period of giving.

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\(^8\)Results are robust to many specifications of this cap. Results available upon request.

\(^9\)I also conducted all subsequent analyses using the networks of communication measuring status as either (a) row-adjusted indegree, which is equivalent to the measure used in Gould’s (2002) formal model of status hierarchies; and (b) pagerank, which is equivalent to row-normalized Bonacich centrality, the measure used in Bothner et al. (2010). The results using communication data are substantively identical and available upon request.
orders (right plot), and the people who transition between these two groups (middle plot).

[Figure 2 about here]

Established order givers have significantly higher average status than those who have never given orders, replicating prior cross-sectional findings (e.g., Brass 1984). Second, the significantly higher starting point of the Transition trajectory is evidence that long-term status indeed increases the chance of transitioning into order giving. However, the individuals who transition into giving orders have a lower level of status 20 weeks before they give orders than they do when they begin giving orders; long-term status advantages account for some but not the majority of status difference between those who give orders and those who do not.

While Figure 2 is useful for comparing the relative status of the three groups, it has the disadvantage of unbalanced panels: the composition of individuals changes in each week due to weeks of non-usage, left censoring, and right censoring. Figure 3 recalculates the status trajectories using an unbalanced panel fixed effects model as implemented in Croissant and Millo (2008). It models individual status as a function of each week by including a binary indicator variable for each week before and after order giving begins, holding the transition week as the comparison set (thus its lack of confidence interval). The use of binary indicators instead of a linear or quadratic term keeps the model non-parametric (as in Srivastava et al. (2017), who use a similar approach to identify trajectories). This allows it to identify whatever shape of trajectory is evident in the data. In order not to over-emphasize individuals with very high status, I also included fixed effects for individuals. The resulting model calculates the mean within-person deviation in status relative to the first week of order giving, allowing
the curves to focus on the average trajectories in status, rather than their average level.\footnote{While some individuals may be giving orders as proxies for higher-rank alters, to the extent that they are acting entirely as proxies, then their data in the software will actually be measuring this higher-rank alter, in which case all inferences remain the same. If they are only a partial proxy, then their contribution to the within-person findings reflect the way their own status changes as they begin to give orders on behalf on this higher-rank alter.}

Figure 3 shows the within-person status trajectories. It offers definitive evidence that status does not increase after a person begins to give orders: \textit{any increase in status occurs before he or she gives the first order}. The implication of behavioral interchange mechanisms—that individuals’ status increases as others witness their giving orders for the first time—is not borne out by this trajectory (Skvoretz and Fararo 1996).

The trajectory in Figure 3 does reflect the implications of the power-use mechanism: the act of giving orders forestalls any further increases in status due to the transition (Lovaglia 1995; Willer et al. 2012). The small positive trend in status after the transition is equal to the tenure-driven trend observable in both the Never and Established groups. This finding is consistent with the empirical pattern that Blau (1964) described as giving orders “discharging obligations” inherent in high status. It has been more precisely articulated theoretically in Willer et al. (2012): observing an individual use the power they have leads to observers tempering their expectations about the person because of negative feelings triggered by the power use.

Addressing two open questions about this trajectory will help refine the model developed below: does status always increase as part of transitions or is the trajectory driven by there being a threshold level of status necessary to begin giving orders, and do formal transitions
(in which the orders are given as the result of a change in an official manager-subordinate relationship) follow the same pattern as transitions in general? To answer these, I draw on the more detailed data from the GuestInn case study.

A Status Threshold Model of Order Giving

In my interviews with and exploration of data from GuestInn employees, I noticed that some people immediately began giving orders when an opportunity arose that justified it whereas others felt a great deal of hesitation. Whether they hesitated or not seemed tied either to their self-perception of their relative ability or to anticipated rejection by others. Anderson et al. (2006) argues that these are two sides of the same coin: individuals’ self-perception of their own relative ability will be based on how other group members perceive them. If so, then we would expect those who are already high-status in their coworkers’ eyes to not have the same pattern of waiting to give orders that characterizes the overall trajectories.

Following this intuition, I took all Transitions in the full dataset who had been active in their organization’s TaskFlow for at least a half-year before they began to give orders and split them into two groups based on whether they already had status above the average level of order givers (1.25) at least 20 weeks before they began giving orders. The first group, Low Initial, had average statuses below 1.25 over the 26 to 20 weeks before they began to give orders. The second group, High Initial, had average statuses greater than 1.25 during the same period. Figure 4 shows how these two groups’ status trajectories differ: the 852 high-status individuals have some initial reversion to the mean but then have relatively unchanged status before and after beginning to give orders. Their status, it appears, is
already high enough to legitimize their giving orders. The 1,694 people who begin with lower status, on the other hand, exhibit the pattern observed in Figure 3: their status increases for 20 weeks before they begin to give orders. That 71% of the Transitions were people who had lower status at least a half-year before giving orders is an indication that this is a common path into order giving.

[Figure 4 about here]

These results show it is those with low status that exhibit an increase in status and that they wait until they have reached a higher status to begin to give orders. As discussed above, Willer et al. (2012) found that having but not using power leads to increased status in the eyes of observers. Assume, by analogy, that having the opportunity to give orders but hesitating to do so because of one’s low status enhances status via the same mechanisms as not using exchange-position power. This assumption is reasonable (if provisional) given the unclear scope conditions of power-exchange findings in general. If true, then these findings offer an explanation of the dynamic by which status increases before order giving. Those with low status in the eyes of their coworkers perceive that their orders may be poorly-received and so choose not to give orders. Instead, they engage in conspicuous forbearance, either taking on additional work themselves or making requests of their coworkers in indirect ways—activities that I observed daily in my time at GuestInn. Their coworkers, on seeing this behavior, increase their esteem for the focal individuals. This cycle continues until the individual perceives that he or she has sufficient status to begin giving orders, at which point the mechanisms leading to increasing status cease and his or her status stabilizes.
The Role of Formal Roles

At GuestInn, I found formal authority relations and order giving to be much less tightly coupled than frequently assumed. Only 113 out of 698 official manager-subordinate dyads exhibited regular order giving. In most parts of the organization, formal authority was limited to control over hiring/firing, promotion, salary, and vacation time, whereas task-related authority was more fluid. This sort of separation of authority is not uncommon in small, rapidly changing organizations like GuestInn but is also characteristic of matrix-type formal structures used at enormous bureaucratic organizations like IBM (Heckscher 2007). It was also true that order giving was common outside of managerial relationships at GuestInn. Out of 251 dyads which exhibited regular order giving, only 113 had an official manager-subordinate relationship.

To see if the empirical pattern observed in Figure 3 is driven by changes in the formal hierarchy, I used the GuestInn HR data to identify individuals who transitioned into formal managerial roles. Figure 5 shows the status trajectories of the 24 individuals who had worked at GuestInn for at least 16 weeks when they became formal managers of a coworker for the first time. Their average status is relatively flat except during the week of their promotion. This indicates that the trajectory explored in Figure 3 is driven by low-status individuals transitioning into \textit{informally-justified} order-giving roles, rather than formal changes in managerial authority. This is unsurprising given that we would expect promotions into formal management to be determined largely on the basis of relative status.

[Figure 5 about here]
Model and Theoretical Implications

The quantitative findings above trace two modal status trajectories of individuals experiencing transitions in their authority relations to their coworkers: those with high status experience no change in status when beginning to give orders; and those with low status experience up to 20 weeks of status increase before beginning to give orders and have stable status afterwards. These empirical patterns are consistent with a process where self-perception and perception by alters interact through the previously discussed social-psychological mechanisms—legitimacy judgments and reassessments, self-assessment on the basis of others’ perceptions, and power use undermining status increases. Figure 6 a stylized overview of this process.

First, an opportunity for or expectation of order giving has been created—either due to formal promotion, unplanned shifts in workload that generate need or opportunity for coordination, or shifts in semi-formal patterns of responsibilities. Analyses of participant observation data and interviews from GuestInn indicated that such changes were common as the organization adapted to its environment and routinely justified new patterns of order giving. New routines—both informal and formal—put people in a position where they needed to make regular requests of others, justified by the shared routine. Workload might increase in a group where one person was perceived as higher ability or more experienced, and that person would take on an informal coordinating role within that group. Finally, a group might decide that a particular person “owned,” or was responsible for, a particular piece of work. Sometimes this would justify others making demands of the person on the basis of obligations
associated with their ownership; sometimes the ownership would justify the person making requests of others on the basis of rights associated with ownership.\textsuperscript{11}

Prior laboratory work (Aime et al. 2014) has established that such shifts can have immediate impacts on whether an individual gives orders in a group and whether the group sees that behavior as appropriate. In organizations, however, the focal individual has not previously given orders prior to such opportunities; there is a stable prior assessment that he or she is not an order giver that must first be overcome.

In the second step, whatever the initiating cause of a shift, people considering giving orders will \textit{reassess the legitimacy} of themselves giving orders (Tost 2011). They base this assessment on others’ perceptions of them (Anderson et al. 2006; Anderson et al. 2012). If these focal individuals anticipate that orders will be resisted or judged harshly due to insufficient status (Anicich et al. 2015), they do not give public orders. Rather, they achieve the necessary coordination through other means. People at GuestInn repeatedly mentioned either taking more work on themselves or finding indirect ways to ask their coworkers for help without giving direct orders, engaging in a form of \textit{conspicuous forbearance}. In witnessing the accomplishment of group goals without explicit requests for deference, coworkers increase their assessment of the person (Willer et al. 2012), affording him or her higher status and offering more task-related deference.

Third, those who do (initially or eventually) assess their status as sufficiently high (Anderson et al. 2006; Anderson et al. 2012), come to believe that they can give orders without repercussion (Anicich et al. 2015). When recounting transitions in their own self-perception,

\textsuperscript{11}The concept of ownership is more fully developed in other work using the GuestInn data (author-identifying, n.d.).
many people at GuestInn told me how they had to “get comfortable telling [a particular coworker] what to do” or that it took awhile “to feel okay being the boss.” At this point, the focal individuals exit the reassessment mode, presuming their order giving to be legitimate (Tost 2011) and begin to give orders. This shift to giving orders undermines the source of their status increasing in the eyes of coworkers (Willer et al. 2012), leading it to stabilize. This process model combines several laboratory-demonstrated social psychological mechanisms to give an account of how individuals’ status changes when they first transition into giving orders that is consistent with the observed empirical patterns of these transitions. This model represents a departure from theorizing status change building from theories of status hierarchy emergence. In dynamic theories based on emergence models (e.g., Skvoretz et al. 1996), status behaviors—such as giving orders—are the source of changes in relative status. In the present study, however, giving orders was constrained by status and did not increase, but rather stabilized, individuals’ status. Because the status hierarchies in emergent models are nascent, they do not constrain behaviors the way existing status orders can and do in more established social life.

When status behaviors are themselves subject to legitimacy judgments based in existing status hierarchies, we have to look elsewhere for the interactional bases of changes in status. I have proposed, based on ethnographic inquiry and prior laboratory work, that conspicuous forbearance plays a large role in the status increases that serve to legitimate an individual ultimately giving orders. More broadly, this indicates that the development of dynamics accounts of status change may require considering not just the status behaviors that are associated with higher status, but other behaviors that may increase status when individuals
are already known to fellow group members.

Discussion: Open Questions

Some elements of the model are more speculative than others and point the way to potential future research on the relationship between status, power, and order giving in organizations. First, the mechanism by which status is proposed to increase in the process model—through conspicuous forbearance leading to higher assessments—is consistent with work on power use (Lovaglia 1995; Willer et al. 2012) and more recent work showing the importance of individuals mitigating negative feelings associated with their high rank in social hierarchies (Hahl and Zuckerman 2014; Bai 2017). More directly replicating the results of Willer et al. (2012) both in and out of the lab, however, would help establish the causal validity of conspicuous forbearance in accounting for how status changes unfold.

Future work could also address whether it is forbearance itself—not using power—or performances of generosity that lead to status increases. For example, an investigation of failed transitions—people who attempted to give orders and then stopped—might uncover further details about the interpersonal work that allows individuals to shift into legitimately giving orders. It will also be important to explore how this mechanism interacts with the status characteristics of individuals: to what extent is conspicuous forbearance a route to status for all people or only available to some (Ridgeway 1982; Fiske et al. 2002; Ridgeway 2011)?

Third, it remains necessary to establish that the shifts in workflow described above are sufficient to provide the context for conspicuous forbearance mechanisms. It remains an open
question whether the sorts of events that initiate changes in order-giving opportunities at GuestInn exhaust the possibilities in other organizations. Aime et al. (2014) showed that shifts in resource access during a group task predicted who would give orders and that if these orders were seen as legitimate, the group would be more creative. Future work could build on this finding, testing whether people given access to a resource and enough time could generate the status necessary to give legitimate orders.

Fourth, individuals with the opportunity to give orders but choosing not to do so until their status is high enough contradicts recent experimental work showing that people increase their demands of others when they gain power in a game (Sivanathan et al. 2008). On the one hand, it may be that resources are more diffuse sources of power in organizations than advantageous positions in games. On the other hand, it may be that relational embeddedness (relative to the un-embedded nature of laboratory games) drives the difference. It would be interesting to revisit the experiments of Sivanathan et al. (2008) using a collective task to induce a status hierarchy in a group first and seeing if the effects are indeed mediated by the status hierarchy in which they are embedded. This echoes ideas raised by economists (Baker et al. 1999) that the repeated-game nature of organizational life makes it difficult for upper management to regularly exercise discretion over the task management of middle managers, a discussion to which a sociological perspective would make a strong contribution.

Fifth, the choice to use TaskFlow (as opposed to another project management system) potentially indicates that these groups rely more on shifting project-oriented formal structures than rigid hierarchies of authority (Turner 2009). The foregoing study, by connecting social psychology accounts of status and power to changes in this empirical setting, thus lays the
groundwork for more rigorous theorizing of how authority, power, and status work in these sorts of organizations. It remains an open empirical question, however, whether the temporal patterns identified in the present study would be identical in more traditionally bureaucratic organizations. There is evidence that industry heterogeneity is not the driver of the results: I compared the teams in organizations in the Software or Service industries to those known to be in ten other industries, finding substantively identical results in both groups (see Appendix 2 for details). The data from an analogous project management system used by more traditional organizations could be analyzed using the methods developed here to either confirm the generality of these findings or specify ways these processes differ in large bureaucracies. Either way, the results would offer an important extension to the present study.

Finally, status regularly interacts with other social hierarchies. The present study emphasizes its interaction with authority relations as manifested in order-giving behavior but could potentially guide work on how a status hierarchy interacts with other hierarchical relations and other status behaviors. For instance, it might be extended to study the dynamics of status with changes in bullying behavior in schools (Shepherd and Paluck 2015; Chu 2019) or how shifts in non-work-related hierarchies interacts with relative status perceptions at work. To explore these spaces, we might generalize the question of the present study from “how does status change unfold when order-giving behavior changes” to “how do changes in one status hierarchy unfold when people begin to perform status behaviors on the basis of another social hierarchy?”

My hope is that the present study establishes that it is possible to obtain or generate the longitudinal observations necessary to measure status trajectories and thereby build richer dynamic theory. Furthermore, as the first study of individual status change to pay close attention to the time over which mechanisms operate, it indicates the relevant scales over which data must be collected. Finally, this study underscores the critical importance of using ethnographic data to figure out how known mechanisms fit together to account for an observed empirical pattern. Here, as in many cases, such an approach exposes gaps in our knowledge, pointing the way to necessary theoretical development and associated causal studies. An advantage of supplementing status and behavioral data with ethnographic data is that the researcher will have a ready source of data from which to generate testable hypotheses about these gaps. Taken together, a set of such projects would allow us to develop an account of status that accommodates dynamics.
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Figure 1: Relevant social-psychological mechanisms linking order giving, status perceptions, and ego legitimacy assessments, with definitive references. Rectangles (Alters’ perceptions of ego) are continuous values; decision diamonds (Legitimacy Assessment and Ego Giving Orders) are binary Yes/No assessments or decisions made by a focal individual.
Figure 2: Average Status (with 95% confidence intervals) over time for those who have never given orders (left), those who have been giving orders for 16 or more weeks (right), and those who transition between the two groups (middle). Established order givers have significantly higher average status than Never order givers, replicating prior cross-sectional findings. Transitions exhibit four key patterns: (1) the significantly higher starting point of the range is evidence that people with higher status are more likely to begin giving orders, (2) average status increases before a person starts giving orders, and (3) there is no increase in individuals’ status after they begin to give orders.

Figure 3: Average within-individual status trajectories. Weekly intercepts and 95% confidence intervals of a time-series model of status with fixed effects for individuals. Period of first order giving is held out as the reference category. The intercept is set so that y=0 for the first week of giving orders. The result confirm (1) 24 weeks of increasing status before individuals’ first give orders, (2) no increase in status after they begin giving orders. The slight positive slope after order giving begins is equal to the tenure-driven upward slope observed among Never order givers and other Established order givers.
Figure 4: Average Status (with 95% confidence intervals) of individuals with at least 24 weeks’ tenure before they first begin to give orders, split by whether they have Low Status (under 1.25) over the 20-26 weeks before giving orders or High Status (above 1.25) over the same period. Individuals who already have status above the average status of order givers (1.25) are able to begin giving orders without going through the status-increasing process. Low-status individuals, on the other hand, wait to give orders until their status has increased.

Figure 5: Average within-individual status trajectories for 24 individuals at GuestInn who became formal managers after at least 16 weeks working there. Unlike the trajectory centered around order giving, formal changes appear to produce a one-time rapid upward shift in status, and are not characterized by increasing status before the promotion.
Figure 6: Fitting the mechanisms together into a process model of transitions in order-giving behavior that reflects the empirically-observed status trajectories (stylized representation in top section of figure).
References


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