Occupational Stereotypes, Perceived Status Differences, and Intercultural Communication

In Global Organizations

Paul M. Leonardi
Department of Communication Studies
Department of Industrial Engineering and Management Sciences
Northwestern University
2240 Campus Drive,
Evanston, IL 60208
Leonardi@northwestern.edu

Carlos Rodriguez-Lluesma
Department of Managing People in Organizations
IESE Business School
CLluesma@iese.edu

Author Note:

Financial support for this study was provided by National Science Foundation Grants ITR-0427173 and SBE-0939859, as well as the Robert and Kaye Hiatt Fund for Research in Media, Technology, and Society at Northwestern University.
Occupational Stereotypes, Perceived Status Differences, And Intercultural Communication
In Global Organizations

Abstract

This paper offers a novel perspective on why individuals in global organizations make culturally based attributions of their colleagues that impede effective working relations. Drawing on observational and interview data from an ethnographic study of product development work at a global automaker’s engineering centers in Mexico, the United States, and India, we show the important role that occupational stereotypes and perceived status differentials play in global workplace interaction. The findings demonstrate that individuals who consider themselves to be “low-status” attempt to increase their status by leading high-status individuals to believe that they work in ways that reflect dominant occupational stereotypes. However, because these stereotypes are often inaccurate, members of the high-status culture assume that the stereotype-imitating behaviors of low-status individuals represent deficiencies in how they work. These findings have important implications for intercultural interaction in the global workplace and for theories of communication in multinational organizations.
Few knowledge-intensive workers in today’s global economy can claim to work only with individuals in their own country. From large multi-national corporations that regularly assemble project teams comprised of individuals from multiple countries, to small domestic-based independently owned firms whose management chooses to source design, service, or manufacturing processes to offshore affiliates, daily global interaction in the workplace is on the rise. Researchers who focus on communication in global organizations have convincingly demonstrated that workers draw their identities, and, consequently, their work styles from the various cultures (e.g., national, occupational, organizational) in which they claim membership (Gibbs, 2009a; Stohl, 1995). These differential cultural profiles assembled by team members can create tensions (both good and bad) that undergird global interaction in the workplace (Gibbs, 2009b).

One of these tensions that has received little examination in the literature on global workplace interaction is the negotiation of status. In this paper we focus on status through the lens of cultural stereotypes. In doing so, we offer a novel perspective on why individuals in global organizations make culture-based attributions of their colleagues that impede effective intercultural working relations. This perspective, inducted from an ethnographic study of product development work at a major global automaker’s engineering centers in three countries, highlights the important role that culturally based stereotypes and perceived status differences play in global workplace interaction. We show how perceived status differences can lead workers in one country to tell coworkers in another country that they completed tasks in ways that were different than they actually did and how this inaccurate communication about their work can result in misattributions about their skill as professionals by those same coworkers. By focusing on the creation and deployment of stereotypes in an empirical organizational setting, as opposed to the laboratory, we are able to show how cultural memberships produce stereotyped perceptions, and how perceived
status differences lead groups to inadvertently enact certain cultural stereotypes in an attempt to bolster their own status – sometimes with negative consequences.

**Theoretical Background**

**Stereotypes and Social Interaction**

When individuals interact, in formal or informal groups, with people from diverse social categories, their differences are more likely to be salient and, therefore, more likely to activate social stereotypes associated with that category (Hogg & Reid, 2006). For example, people are more likely to think of themselves in gender-stereotypical ways in mixed-sex as opposed to same-sex groups (Hollingshead & Fraidin, 2003) and more likely to think of themselves as members of a particular national cultural group when participating in mixed-culture rather than same-culture groups (Yoon, 2011). When stereotypes are well known, but individuals are not known personally to each other, those stereotypes may affect both how individuals treat one another and how they view themselves.

People change their behavior in instances of global workplace interaction not simply because they hold a stereotype of others, but because the presence of someone from another culture compels them to employ cultural stereotypes to evaluate their own capabilities in relation to those embodied in the stereotype of their intercultural communication partner (Goff, Steele, & Davies, 2008). For example, if an American is interacting with a Brit she may stereotype herself as speaking sub-standard English and take on an affectation that somewhat resembles a British accent, or begin to use words such as “brilliant” or “cheeky” that are not normally part of her lexicon. Research suggests that this practice of communication accommodation occurs regularly in cross-cultural settings in both speech acts and behaviors as individuals (a) activate stereotypes about themselves and others (e.g., “Brits speak a cultured English, but Americans, like me, speak a sub-standard English”), (b) use those stereotypes to determine what their communication partner
must think about them (e.g., “Brits think that Americans speak sub-standard English”) and (c) consciously or unconsciously adapt their communicative behaviors to accommodate the expectations of people who embody a different stereotype (e.g., “I will use the word ‘brilliant’ instead of ‘cool’ in my conversation with him so I don’t seem so vulgar”) (Gallois, Ogay, & Giles, 2005).

**Culture and the Development of Occupational Stereotypes**

Within organizations, many stereotypes exist about particular occupations. For example, studies have shown that individuals hold strong popular stereotypes about how accountants (Cory, 1992) and engineers (Leonardi, Jackson, & Diwan, 2009) work. Occupational stereotypes are often activated in situations where people from multiple occupations come together to work on a shared task, such as architects, engineers, and contractors on construction sites (Loosemore & Tan, 2000). But within a given occupation, occupational stereotypes can be activated when group members come from different national cultures. Yurtseven (2002), for example, discusses how the “engineer” is stereotyped differently across various national cultures and how such stereotypes cause problems for foreign engineers who wish to pursue advanced degrees or work in the U.S. He suggests that the stereotype of the “U.S. engineer” as someone who likes to tinker, works alone, and is a know-it-all inventor (p. 17) does not match up with the identity of engineers in many other countries, and it often discourages foreign-born individuals from wanting to work as engineers in the U.S.

Little is known about the role that occupational stereotypes play in organizations, particularly in situations where interacting members of the same occupation are from different national cultures. Recent examinations of the role of occupational and professional identities in the workplace observe that occupational standing often dwarfs other cultural associations because of the status associated with certain kinds of work (Cheney & Ashcraft, 2007; Collinson, 2003).
Some studies have even begun to show that when membership in occupational culture is held in common, organizational members will sometimes attempt to construct status differences by appending other (perceived lower or higher status) cultural memberships, like sociodemographic culture (Dryburgh, 1999; Rumens & Kerfoot, 2009) or national culture (Gelfand, Erez, & Aycan, 2007; Kunda, 1992) to it.

Thus, we might expect that in instances of global workplace interaction, individuals would draw on culture-specific occupational stereotypes to make sense of their own work styles and the work styles of others, rather than simplistic culture-based stereotypes. Moreover, Smith et al. (2006) show that when individuals do not regularly engage in the kinds of informal social talk and interaction that occasion liking and friendship, repeated, formal, task-based interaction between individuals actually reduces individuation and increases the likelihood of stereotyping. Because, in most organizations, global workplace interaction happens through media that make the transmission of social cues and informal interaction difficult (Cramton, 2001; Maznevski & Chudoba, 2000), it tends to be task-based (Gelfand, et al., 2007) and relatively formal (Gudykunst & Ting-Tommey, 1988). Therefore, we might expect that culture-based occupational stereotypes would surface in these kinds of interactions to interpret ambiguity and guide behavior.

The extant literature suggests that stereotypes shape perceptions of self and others in global interactions and that individuals may confound national and occupational identities into stereotypes when interacting with people from other countries. Yet it is unclear (a) when individuals activate occupational stereotypes to make sense of their intercultural global interactions, (b) under what conditions they might change their work styles when interacting with people from the same occupation but who work in different countries, or (c) how stereotype-induced changes in behavior or communication might affect ongoing social dynamics and task completion in global organizations. To explore these issues, we turn to data collected during an
ethnographic study of global engineering work at International Automobile Corporation (IAC).

Methods

IAC (a pseudonym, as are all names used in this article) is a large automobile manufacturer headquartered in the United States whose distribution of engineering work across several continents is increasingly typical of the industry. Although the majority of IAC’s engineering workforce resided at its technical center in Michigan, IAC has long maintained engineering operations abroad and at the time of this study had technical centers in over eight countries.

Engineers at each technical center developed vehicle architectures upon which different car or truck models (called programs) can be based. Engineers at these technical centers were responsible for designing vehicle parts and sub-systems, assembling those parts and sub-systems into a complete computer model of the vehicle, simulating various scenarios to test the performance of the vehicle on parameters (e.g., safety, noise, durability, and fuel economy), redesigning parts and subsystems to increase their performance, and, finally, testing the actual built vehicle against the results generated in the simulations. Engineers were typically hired either from other automotive companies or out of structural and mechanical engineering programs at universities. They were normally hired in cohorts and the entire cohort was split into engineering specialties and trained on the use the specific engineering methodologies and technologies normally used in that specialty.

Each of IAC’s technical centers conducted its own training of newly hired employees.

To efficiently balance engineering workload on complex projects, IAC encouraged technical centers to share engineering design and analysis work with one another. We focus the analysis in this paper on the work of engineers in Mexico during 2006. The Mexico center was chosen because engineers there worked interactively with engineers in both the U.S. and in India. Thus, we were able to capture the separate global workplace interactions of one set of engineers (in Mexico) with engineers from two other countries (the U.S. and India). When engineers were
sending work to a different country, they interacted with individuals in that country regularly via email, telephone, NetMeeting, and instant messaging – sometimes as much as three times a day. Engineers from different countries almost never met face to face. All cross-country interactions were conducted in English, and engineers in all three locations spoke English at a relatively high level of fluency. The Mexico center was an average-sized technical center at IAC and was 15 years old at the time that data collection took place. The U.S. center was IAC’s largest engineering center. Formally established in the 1950s, it was considered as the central engineering location at the company. The India center was IAC’s newest engineering center. At the time of this study it was only three years old, but due to low labor costs in India and IAC’s interest in increasing sales in the local market, the India center was the third largest in IAC’s global product development network after the U.S. and German centers. The office spaces in which engineers in these three countries work looked identical. Engineers were assigned to cubicles in large open rooms. Engineers sat next to other engineers who did similar kinds of work (e.g., aero-thermal analyses) for the same vehicles (e.g., a large truck).

Semi-structured interviews (30-60 min duration) were conducted with 28 engineers at the Mexico center who were currently working with both the U.S. and India centers. These 28 individuals represented 94% of all engineers at the Mexico center who were working with both the U.S. and India centers at that time. In addition to interviews, in-depth observations were conducted of a randomly sampled subset of those engineers who were currently working with both centers. In total, we spent 2½ months observing the work of 6 engineers at the Mexico center. Each engineer was observed for three separate 3-5 hour sessions, for a total of 94 hours of observation. We also observed engineers in the U.S. and in India who worked with the Mexico center. In the U.S., 4 months were spent observing 12 engineers (each for 3-5 hours on three separate occasions) for a total of 126 hours of observation. 4 person-months of observation were
completed of 11 engineers at the India center (each for 3-5 hours on three separate occasions) for a total of 107 hours of observation. The analyses of these data sources proceeded in two sequential phases. Below, we describe the specifics of data collection and the analysis stages used in each phase.

**Phase 1: Interview Data**

*Collection.* Interviews conducted with the Mexican engineers who worked with engineers in both the U.S. and India were aimed at generating insight into two areas: (1) what, if any, stereotypes Mexican engineers had of U.S. and Indian engineers and (2) what, if any, stereotypes Mexican engineers felt that the U.S. and Indian engineers held about them. To explore these issues informants were asked general questions like “What are some of the major benefits and challenges to working with engineers in other countries?” Throughout the interview we moved to more specific questions like “Do engineers in the U.S. and India build and analyze simulation models in the same ways you do?,” and “What impressions do you think engineers in the U.S. and India have about the way you do your work?” We did not ask specific questions about occupational stereotypes so as to not bias informants’ answers to align with our research questions (Kvale, 1996). Mexican engineers were also asked about how they normally conducted their routine model building and analysis practices and how they interacted with other Mexican engineers.

Each interview was audio-recorded on a digital recorder with the informant’s permission. With the digital recorder running, the observer was free to take notes on a sheet of paper about items informants mentioned that were of interest and questions that remained unanswered. All recorded interviews were later transcribed verbatim.

*Analysis.* The goal of analyzing the interview data was to uncover what practices Mexican engineers felt characterized their normal style of work, what stereotypes Mexican engineers held
about engineers in the U.S. and India, and what stereotypes Mexican engineers believed the U.S. and Indian engineers held of them. To fulfill this goal, we employed four steps of analysis.

In Step 1, we flagged all instances in which Mexican engineers discussed their styles of working – both alone and with other engineers in Mexico. For example, engineers mentioned that they often consulted their colleagues in Mexico if they did not know how to use a piece of software or were not sure what the results of a particular analysis were suggesting. Also, engineers mentioned that they often did not start building simulation models from scratch; rather, they examined models that their Mexico colleagues had built in the past to learn best practices from them. In Step 2 we constructed codes representing the variety of work styles identified in Step 1. These first two steps of analysis allowed us to characterize the styles in which Mexican engineers believed they worked.

In Step 3, we flagged all instances in which Mexican engineers discussed the work styles of U.S. and Indian engineers as well as what they believed the U.S. and Indian engineers thought about the work styles of engineers in Mexico. In Step 4, we followed Gibbs’ (2009a) metaphor of culture as a kaleidoscope of memberships held by organizational members. We sorted our codes from step 3 into the membership categories of national culture, corporate culture, occupational culture, sociodemographic culture, and micro-organizational culture as outlined by Gibbs (2009a, p. 92). Using this taxonomy of cultural dimensions allowed us to take a nuanced view on culture and, therefore, to understand why certain cultural differences may or may not be triggered in particular circumstances, as well as the relations between those cultural dimensions and status dynamics.

Finally, in Step 5, we compared the codes generated in Steps 2 and 4 to identify the broad dimensions upon which the Mexican engineers believed that engineers in the three countries differed. After some consolidation of codes, three “stereotype dimensions” emerged: Consultation,
collaboration, and innovation. The analysis suggested that Mexican engineers believed that their style of working on these three dimensions was different than the U.S. and Indian engineers’ styles of working along these three dimensions – and that U.S. and Indian engineers were similar to each other on these three dimensions.

Phase 2: Observational Data

Collection. Observations of the engineers in all three countries were conducted with the goal of compiling a complete record of all the actions they took to accomplish their work tasks. We reasoned that if engineers’ actions were being activated by occupational stereotypes we would see evidence of these stereotypes and engineers’ responses to them best in their normal work behaviors. It quickly became clear that to complete their work tasks, engineers needed to spend a lot of time interacting with their coworkers (both at their respective technical center and abroad) to successfully build and analyze simulation models of vehicle performance. Engineers also spent much of their time alone at their computers working with various simulation software applications. Thus, fieldnotes captured the broad range of solo and group interactions that engineers conducted in their work. In Mexico, engineers normally spoke Spanish when communicating with one another. Fieldnotes were taken in Spanish and were later translated into English for analysis.1 In the U.S. and India, all workplace interaction was conducted in English.

We captured the interactions that occurred in each observation in a number of ways. The researcher sat behind the informants at their desks while they worked and followed them when they went to meetings and to talk informally with colleagues. During all of these activities notes were taken on a small laptop computer, indicating the types of activities the engineers were conducting, why they conducted them and with whom or what they were interacting. Additionally, all these observations were recorded on a digital audio-recorder. Using audio-recordings allowed

---

1 Both authors are fluent in Spanish.
us to document the conversations engineers had and to capture their personal thoughts about
different matters. We also let the audio-recorder run when engineers were working silently at their
computers. All of the audio-recordings were transcribed verbatim. Later, these audio recordings of
dialogue were integrated with the fieldnotes. By using the digital time stamp on the audio-recorder
in conjunction with the observation records we were able to document how long informants
worked on particular tasks. The combined observation records (fieldnotes with corresponding
dialogue) for one observation were normally between 20 and 30 pages of single spaced text.

**Analysis.** Analysis of the observational data proceeded in six steps. Steps 1-2 were
conducted to uncover how Mexican engineers normally performed their routine work tasks. Steps
3-4 were conducted to identify what Mexican engineers communicated to U.S. and Indian
engineers about how they conducted their work. Step 5 was conducted to uncover why Mexican
engineers communicated the things they did in their interactions with U.S. and Indian engineers,
and Step 6 provided insight into what U.S. and Indian engineers thought of Mexican engineers
after their interactions with them.

Step 1 dealt only with the observation records assembled of the work of engineers in
Mexico. We flagged, in each of these observation records, all instances in which Mexican
engineers worked alone or with other Mexican engineers, but not any instances in which they
interacted with U.S. or Indian engineers. In Step 2, codes were placed on the instances flagged in
Step 1 that corresponded to the three stereotype dimensions of consultation, collaboration, and
innovation identified in Step 5 of the interview data analysis. For example, we looked in the data
for all instances in which Mexican engineers had to make a decision and coded the path they chose
(e.g. consulting a manager or another engineer or making the decision by themselves).

In Step 3, we dealt with all the observation records – those created of engineers working in
Mexico, the U.S. and India. We flagged all instances in these records where Mexican engineers
interacted with other Mexican engineers (43 interactions), Mexican engineers interacted with U.S. engineers (21 interactions) and Mexican engineers interacted with Indian engineers (29 interactions). In Step 4, we used the three stereotype dimensions identified in the Step 5 analysis of the interview data and coded what Mexican engineers communicated to other Mexican engineers and to U.S. and Indian engineers that they did on each of these three dimensions. Next, we compared the findings from Steps 2 and 4 to determine what specific practices Mexican engineers actually performed when doing their work (what we call “actual practices”) and what practices Mexican engineers told other Mexico, U.S. or Indian engineers that they performed (what we call “communicated practices”).

In Step 5 we coded all of the justifications that Mexican engineers gave for why they told Mexico, U.S., and Indian engineers that they performed certain practices and in Step 6 we coded all reactions that Mexico, U.S., and Indian engineers gave to the communication of work styles made by Mexican engineers. These analyses allowed us to learn why Mexican engineers engaged in the types of communication that they did.

**Findings**

The findings are presented in three sections. The first section shows that Mexican engineers held strong stereotypes about how U.S. and Indian engineers worked and also that they believed U.S. and Indian engineers held strong stereotypes about them. The second section demonstrates that Mexican engineers accurately communicated their actual work practices to other engineers in Mexico and to engineers in India, but told U.S. engineers that they worked in ways that they had not. Mexican engineers misrepresented their work styles to U.S. engineers because they perceived the U.S. engineers as higher status and, consequently, thought that they should try to align their work styles with stereotypical imagery of what makes a “good U.S. engineer” so that the U.S. engineers would think highly of their work. The third section describes why negative
consequences arose when Mexican engineers attempted to present themselves in the stereotypical image of the U.S. engineer.

**Occupational Stereotype Recognition**

On average, Mexican engineers reported 3.4 years spent working with engineers in the U.S. and 2.6 years spent working with engineers in India. Analyses of the interview data indicate that Mexican engineers held a strong stereotype that conflated the national culture and occupational cultural identities of colleagues abroad. As one informant noted:

> When you work with someone in a different country there’s going to be things that are just different. There are different ideas about what it means to be an engineer. It’s not like they respect authority more than we do or they’re more group oriented than we are, it’s not just cultural. It’s that there are different ideas about what it means to do the kind of work we do and that’s very much infused by some cultural practices. The culture and the profession are hard to untangle. It’s just different to be an engineer in different places.

Interestingly, Mexican engineers felt that they worked in ways that were different from how engineers in other countries worked, but they did not perceive large differences between the way that engineers in the U.S. and engineers in India worked, particularly on the dimensions of consultation, collaboration, and innovation

**Consultation.** The first dimension of practice that Mexican engineers felt characterized the work style of an engineer was his or her orientation toward consultation and advice seeking with others. In 83% of the interviews, informants discussed how they actively sought advice and counsel from others when they encountered problems they did not know how to solve or questions they did not know how to answer. As one informant commented:

> Here in Mexico we’re always talking to each another. That’s how you learn and how you make sure your work is high quality. If you have a problem, you ask around and get advice about how to solve it. People expect that you’re going to do that and they’re open to it. They expect you’ll do it too.

However, informants believed that engineers in the U.S. and India did not hold the same orientation toward consultation. 94% of informants mentioned that U.S. engineers typically
refrained from consultation with colleagues and attempted to solve problems on their own while 76% indicated that Indian engineers also staved off consultation if they could. One informant was particularly adamant about U.S. engineers wanting to work alone to take credit for their work:

A lot of times we see that they [the U.S. engineers] won’t ever talk to anyone about what they’re doing, even if the don’t know what they’re doing. If they have a problem or they have some guess that using a nodal body merge is better than just using a 2T weld they’ll just do it and won’t ask even if they don’t know because they just hope it works and they want to tell people they figured it out all by themselves.

In short, Mexican engineers felt that they were not only amenable, but also eager to consult with others, while engineers in the U.S. and India were not.

*Collaboration.* A second dimension of practice that Mexican engineers believed separated them from U.S. and Indian engineers was collaboration. 88% of informants indicated that they regularly collaborated with fellow Mexican engineers. Typically, engineers collaborated by sharing results of prior tasks and models they used to run analyses. Collaboration, in this sense, occurred both actively and passively. Mexican engineers would ask coworkers if they would share files, best practices, and specialized procedures for building and analyzing models. They would also share passwords to folders on which they stored their work so that others could enter and review their models at their leisure. One informant commented that these active and passive collaboration mechanisms were widespread:

Here we all have a sense that we work together and we share things. It’s not like this is mine or that’s yours. We all expect that people will be going through our files and borrowing things that we did or asking about them. If someone didn’t share it [their password] or asked you why you were looking at their models that wouldn’t be very cool.

By contrast, Mexican engineers believed that U.S. and Indian engineers were opposed to collaboration and sharing work. 84% of all informants made some mention of the individual

---

2 A nodal body merge is a computational procedure by which an engineer simulates a spot weld by telling the supercomputer that two elements in the model are actually one. A 2T weld refers to using the simulation software to simulate a weld that joins two thicknesses (T’s) of steel.
perspective that U.S. and Indian engineers took toward their work. Statements like the following were common:

I’ve had similar experiences working with Americans and Indians. They don’t want to share things with you. They want to be the owners of their work. They go to lengths to tell you that this is theirs and not someone else’s. That’s a different mentality to how we work. They would never tell me the directory where their model was so I could look. I’d have to send them a formal request and then they’d probably even say no.

Although most Mexican engineers made sure to mention that they placed no value-judgment on U.S. and India’s engineers’ lack of interest in collaboration, there was a common lament in their voices that they did not choose to share more and be open to building on others’ work.

**Innovation.** The third dimension upon which Mexican engineers felt that they were different from U.S. and Indian engineers concerned innovation in work process. One Mexican engineer summed up this difference succinctly:

IAC has a lot of standard work guidelines for model building and analysis. When you’re doing simulation work you should follow these guidelines because they’ve been shown to lead to robust models or results. Everyone here [in Mexico] follows the guidelines closely. But they [U.S. and Indian engineers] don’t want to follow them. They want to all come up with some new way to do it that’s better than the standard work and they’re always inventing new practices and telling you that what’s in the standard work is not good enough for them.

73% of Mexican engineers mentioned that they routinely followed standard work procedures and 68% mentioned that U.S. and Indian engineers did not. Mexican engineers clearly felt frustrated that their counterparts in other countries often disregarded company-endorsed standard work practices claiming, as one informant did, that by ignoring those practices U.S. and Indian engineers “make you feel like you’re not doing things right when you are following the company policy.”

Consultation, collaboration, and innovation were three dimensions upon which Mexican engineers felt that they worked differently than U.S. and Indian engineers. IAC’s requirement for cross-center projects put into relief for many Mexican engineers not only that engineers in other
countries worked differently than they, but also compelled them to notice that U.S and Indian engineers held stereotypes about the way they worked. As one informant recounted:

You get the sense when you communicate with people in other countries that there’s a stereotype about what the Mexican engineer is like. According to the Americans and the Indians we’re all a little bit lazy because we don’t start things from scratch and we spend all day talking because we’re always working together on things. We’re also not smart enough to come up with new ways of doing things. At least that’s what they think. I’ve started to realize that they have these conceptions about us through little things they say and do when we talk to each other.

Thus, Mexican engineers began to believe that U.S. and Indian engineers held strong stereotypes about them that were both pejorative and incorrect.

**Perceived Status Differences and Attempts at Stereotype Maintenance or Correction**

When two or more engineers at IAC gathered to discuss whether a simulation analysis showed desired increases in vehicle performance, whether certain parts or subsystems had to be redesigned, or whether the simulation model correlated with the results of a physical test, there was a strong company-wide norm for individuals to explain the processes they went through to arrive at their conclusions. As one U.S. engineer observed, “We [engineers] always get criticized for being bad communicators. But you just can’t be a good engineer here [at IAC] or anywhere if you can’t communicate clearly about what you did to get your answer.” This sentiment resounded strongly at all three engineering centers included in this study. Consequently, it was not surprising to find that most workplace interactions among engineers consisted of some amount of time spent in explanation of the processes that were used to arrive at a particular result. Mexican engineers, like all others at IAC, spent a significant portion of time engaged in communication of this kind with both their colleagues in Mexico and their colleagues in the U.S. and India.

Table 1 illustrates the correspondence between the practices that Mexican engineers actually conducted, and the practices they told others that they conducted, along the three stereotype dimensions summarized in the previous section. The first column presents the
stereotype dimensions summarized above. The second column presents Mexican engineers’ actual and communicated practices, taken from the observations of them at work, which correspond to each of the three dimensions. The third column indicates the number of times each of the practices indicated in the second column was conducted by Mexican engineers in their actual work. Columns 4-6 indicate the number of times that Mexican engineers told their colleagues in Mexico and engineers in the U.S. and India that they conducted each of these practices.

The table reveals a surprising finding. Mexican engineers’ actual and communicated practices were aligned when they talked with their counterparts in Mexico and in India, but were not aligned with what they told engineers in the U.S. they did to arrive at their results. In other words, it seems that Mexican engineers were honest with other Mexican engineers and Indian engineers, but not entirely forthcoming with engineers in the U.S. Specifically, corroborating the testimony made in their interviews, Mexican engineers seemed to often seek advice from others to find solutions to problems more often than they decided on a solution alone; they built on others’ work by using their models and related simulation outputs more frequently than they started work from scratch without help from others; and they almost always followed the procedures recommended for model building and analysis in IAC’s standard work guidelines and rarely ever attempted to devise a new procedure on their own. Mexican engineers told other Mexican engineers and Indian engineers that they worked in these ways. But they did not tell U.S. engineers the same thing. Instead, they often told U.S. engineers that they decided on solutions to difficult problems on their own, that they started building and analyzing models from scratch, and, most startlingly, they were twice as likely to say that they attempted a new procedure instead of following standard work guidelines to arrive at their solution.
What accounts for the similarity in actual and communicated practice with Mexico and India colleagues and the discrepancy between actual and communicated practices with U.S. colleagues? Data analysis suggests that perception of status differences is likely an important factor. For example, the following statements that two Mexican engineers made in interviews in response to the question, “What are some of the major challenges you face when working with engineers in other countries?,” illustrate the recognition of status differences:

**Engineer 1:** There is a major pecking order at IAC in terms of engineering centers. The U.S. and Germany centers are considered the best and then Australia is up there and then Sweden. We [Mexico] and Brazil are farther down, but not as low as India and Korea. That’s just something everyone knows. It’s not accurate in terms of skill, but it’s the perception.

**Engineer 2:** One thing is that you feel lower status compared to engineers, like in the U.S. because I think they don’t believe that we’re as good engineers so that’s hard. But we definitely feel that with places like India too – that they’re not as competent as we are.

These quotes, illustrative though they may be in demonstrating that Mexican engineers perceived that they were low status compared to U.S. engineers but higher status than Indian engineers, do not explain why they would tell Indian engineers what they did when they were working and mislead U.S. engineers. The analysis of the interactions between Mexico and the U.S and India centers begins to shed light on this issue.

Consider the following example of an interaction between two Mexican engineers and a U.S. engineer transpiring via a conference call. The Mexican engineers (Mateo and Pedro) have been conducting two different crash tests for a compact car. Mateo has been conducting a side impact analysis (a vehicle runs into the side of the car) and Pedro has been conducting a quasi-static roof crush analysis (simulating the impact of a roll-over). We observed the two engineers over a two-day period sharing models and asking each other questions about their related analysis. At one point, Mateo sat down at Pedro’s desk to help him optimize the finite element mesh that
the supercomputer used to calculate intrusion into the occupant compartment. After finishing their respective analyses, Mateo and Pedro met in a private conference room and sat down next to each other for a scheduled call with Bill, the U.S. engineer:

**Bill:** Walk me through the 208 analysis. It looks like there are issues with the mesh warpage on the roof rails. Who have you been working with on this?

**Pedro:** No one. What do you mean about the issues?

**Bill:** I think you’re having problems correlating the model because the mesh just on top of where the b-pillar connects looks kind of funky. Did you look at the old 208 model I sent over for Theta?

**Pedro:** [Pedro glances nervously at Mateo and Mateo shakes his head “no”] No. We just put this one together based on how we thought it would work best.

**Bill:** Well there’s definitely some problems with it. Let me fix it and I’ll send it back to you so you know what to do.

After the meeting Mateo was asked why he shook his head “no” at Pedro when Bill asked if he looked at the older model when just the day before both he and Pedro were looking at it. He replied:

They [U.S. engineers] are always asking things like that. They think we just copy old models without ever thinking about it. We have good reasons for building the models like we do and we know the warpage is the problem there. But that’s why they ask if we look at the model because they think we don’t know how to do it ourselves so we need them to know that we can build good models without copying. But of course we look at the models. But we just say no we don’t. The irony is I’m sure he wouldn’t look at them if we sent them.

As this example illustrates, Mexican engineers were often cautious about what they admitted to U.S. engineers because they were afraid that U.S. engineers would look at their normal work practices and mistake them for lack of knowledge.

---

3 Finite element analysis is a computational technique used to decompose an object into a large (though finite) number of much smaller objects known as “elements.” The elements are considered connected at defined nodes (corner and mid-segment points), and the entire connected system composes a defined structure called a “mesh.” The mesh is solved by software (known as a solver) run on a supercomputer.

4 A “208 analysis” is the name of a roof crush test sanctioned by the National Highway Traffic Safety Administration. Warpage refers to a distortion in the shape of an element that makes its analysis difficult for the solver code run on the supercomputer.

5 Engineers would correlate their results of finite element analyses with the results of physical tests conducted in the laboratory to verify the accuracy of the simulation model. The b-pillar is the name for the vertical support beam, located between the front and rear doors of the vehicle, which supports the roof. Theta is IAC’s code name for one of their vehicle programs.
As Mexican engineers intimated, U.S. engineers held stereotypes about how Mexican engineers worked and those stereotypes were part of the reason that, as one informant put it, “they think we’re not as good engineers as them and they think they’re higher status.” To combat this problem, Mexican engineers told U.S. engineers that they worked in ways they believed were in line with the stereotype of the U.S. engineer. As another informant said, “We know how U.S. engineers work and they think that’s the best, so sometimes that’s what we tell them we do.” In other words, Mexican engineers worked to maintain the dominant stereotype they perceived about what made a “good U.S. engineer” and show U.S. engineers that they actually embodied it so that they could reduce the status deficit by leading U.S. engineers to believe that they approached engineering work just like U.S. engineers did.

Mexican engineers also perceived a status difference relative to Indian engineers; they believed that they knew more about automotive engineering work and were more competent at difficult engineering tasks than their Indian colleagues. As one Mexican engineer said, unabashedly, “The India center has a long way to go. We need to really teach them a lot. They just don’t have good product knowledge and they make a lot of mistakes.” Because Mexican engineers viewed themselves as higher status, 71% of all informants acknowledged that it was their responsibility to teach the Indian engineers how to improve the quality of their work.

One example of this belief in practice can be seen in an interaction between a Mexican engineer (Luis) and an Indian engineer (Sudhir). Luis and Sudhir had been working together for several weeks on a project to reduce vibration in the front end of a large pick-up truck, which was one of IAC’s best selling vehicles. One morning, as Luis was preparing to call Sudhir for an update on the results of their latest simulation runs, he mentioned, “He [Sudhir] has been having some problems with this model. He’s not following the [standard work] guidelines. I’m going to
have to talk with him about it.” Luis picked up the phone to call Sudhir and opened NetMeeting on his workstation. He and Sudhir talked about the model for a few minutes before Luis stated:

Luis: I’ve been working with Borja [another Mexican engineer] on this and we followed the procedures for representing the body mount dampers from the [standard work] guidelines. Why did you represent them with shell elements instead?

Sudhir: I thought they might not break away in the run if we did it like that.

Luis: You should really follow the [standard work] guidelines on this. Don’t try to invent a new way. They are good procedures for us to follow. Did you ask Himanshu [Sudhir’s boss] about what you should do?

Sudhir: No. I just decided it based on some past work I did.

Luis: You should talk to Himanshu because he probably knows that they [standard work guidelines] are better too. Go ask him next time.

After a few minutes of further discussion, Luis hung up the phone, turned to the researcher observing him, and said:

Over there in India they’re trying to just invent new ways of doing things and not following procedures. They probably get that from the U.S center and the German center. Plus they’re kind of individualistic there in India. We’ve got to try and fix that and get them to follow standard work so they can keep improving.

As Luis stated, Mexican engineers often felt it was their responsibility to correct what they viewed as poor work styles conducted by Indian engineers. In his interaction with Sudhir, Luis straightforwardly admonished him to follow existing best practice procedures instead of trying to invent a new procedure and also to consult with his manager, as opposed to trying to figure out by himself why he was having problems with his model. In their interactions with Indian engineers, Mexican engineers, like Luis, were most often outspoken about which of their work styles Indian engineers needed to change. Their everyday practice of “teaching” Indian engineers new work styles was an overt attempt to correct the Indian engineers’ perceptions that a “good engineer” had to embody the occupational stereotype of the U.S. engineer.

Consequences of Communicated Practices
Mexican engineers’ choice to either maintain (with U.S. engineers) or correct (with Indian engineers) what they perceived as ways of working aligned with the stereotype of the “U.S. engineer” was not without consequence for their global workplace interactions. In this section, we demonstrate how U.S. and Indian engineers reacted to Mexican engineers’ communicated practices during task-based interactions and the effects that these reactions had on the ongoing working relationships between the centers.

As documented above, Mexican engineers believed that U.S. engineers held stereotypes about the “Mexican engineer” as someone who “didn’t start things from scratch,” often spent time “working together on things,” and who was “not smart enough to come up with new ways of doing things.” At no point in observations with U.S. engineers did anyone openly refer to a Mexican engineer by using any of these stereotypes. Instead, one U.S. informant echoed the more commonly held view of the Mexican engineer:

Mexican engineers are pretty good. They’ve come a long way. But they still have some problems. Like they’re always trying to come up with new procedures for things and they never spend time talking with their colleagues who are more experienced, which they should do – like asking questions – because there is some real expertise down there that they’re missing out on.

Interestingly, U.S. engineers did not hold the stereotypes about Mexican engineers that Mexican engineers thought they did. Instead, U.S. engineers talked about the Mexican engineers’ work styles in very much the same way that Mexican engineers talked about U.S. engineers.

The data show two important mismatches that have consequences for global work. The first mismatch is between the stereotype Mexican engineers believed that U.S. engineers held about them and the U.S. engineers’ actual perception of their work styles. The second mismatch is between the ways that Mexican engineers actually worked (as documented through observations) and the ways that U.S. engineers thought Mexican engineers worked. This first mismatch, coupled with Mexican engineers’ perception of a deprecated status position relative to U.S. engineers, led
Mexican engineers to tell U.S. engineers that they worked in ways they had not. Absent any visibility into how Mexican engineers actually accomplished their work tasks, U.S. engineers relied on Mexican engineers’ reports of their work practices to form impressions about how effective Mexican engineers were at automotive product development work. These emergent perceptions brought consequences to the continued intercultural relations between the two centers.

One interaction episode between Victor, a U.S. engineer, and Rafael, a Mexican engineer, provides a clear example. Victor and Rafael were working on an analysis of whether a power inverter installed between the two front rails of a pick-up truck’s chassis was affecting the vehicle’s crashworthiness. As Victor and Rafael discussed the results of an analysis via telephone, Rafael told Victor about how he accomplished the work:

Rafael: I stayed until 8 last night to finish up iterations 42-48.
Victor: Thanks for doing that. But why didn’t you ask Guillermo (a team member in Mexico) to help you to get them done quicker?
Rafael: Eh, he doesn’t know it so good so it’s better if I just do it myself. It gets better results that way.
Victor: He seems to know it pretty good. He worked on this at the last mid-cycle enhancement.
Rafael: Well, it’s better this way.

After the conclusion of their phone conversation, Victor turned to the researcher observing him and said:

I don’t know why they always do this. He should just get help from Guillermo instead of doing it himself. I think Guillermo probably knows how to do this better. It’s stupid. I mean he was already two days late doing this so he should have brought someone else in. I think I’m going to work with someone else next time who’s better at finding people to help or delegating the work. I don’t care how it gets done. Just get it done on time.

As is clear from his response, Victor was upset because he believed that Rafael had not asked for help on the project, opting instead to do the work himself. Victor believed that his refusal to ask for help caused Rafael to deliver the project late and, consequently, Victor vowed to not work with him again. A month later, Rafael reflected on this interaction with Victor:
I had been working with Guillermo on it. But it was too big for the deadline because the model had all kinds of problems with it we had to fix, like penetrations. But if I tell him that Guillermo was doing it and we still couldn’t get it done they will think we’re incompetent – like lazy Mexicans – that’s why he asked who I was working with. So it’s better to just say I was doing it and take the blame for it being late. It’s more understandable to be late with only one person working on it.

Across the 14 interactions between U.S. and Mexican engineers that were observed from the vantage point of the U.S. center (the remaining 7 interactions between the U.S. and Mexican engineers were observed from the vantage point of the Mexico center), the data showed 8 episodes like the one illustrated above in which a Mexican engineer led a U.S. engineer to believe that he/she had worked in a certain way and the U.S. engineer responded by developing the opinion that the Mexican engineer was either foolish or incompetent for choosing to work that way. The immediate consequence in all 8 episodes was that the U.S. engineer vowed to not work with that Mexican engineer again if he/she had the choice. The long-term consequence was that the U.S. engineers developed negative impressions of the capabilities of their colleagues from Mexico. U.S. engineers reported these negative impressions to their managers who often instructed them to work with engineers elsewhere in the company (e.g., Australia or Brazil) instead of Mexico. One perceptive U.S. engineer reflected on this problem:

It just seems like the Mexican engineers have some weird idea about what a good engineer should do. It’s like they’re following some stereotype about computer scientists who code for three months all by themselves in a garage and then come up with some new great program. That’s not how we work here. We value collaboration and learning from other people. You ask for help if you need it to get the work done. If they’re not doing this, eventually they’re not going to get good work from us and they won’t be able to learn.

Mexican engineers’ decision to communicate their actual practices to Indian engineers had much more positive consequences. As one senior engineer in India commented:

We’re the newest engineering center at IAC and we need to learn from everybody. I notice a difference when I work with a Mexican engineer and an American engineer, for example.

---

6 Penetrations are places in the simulation model where two parts share the same vehicle coordinates. The solver will not run the simulation until such problems are resolved.
For one thing, the Mexican engineer is always telling [me] to ask questions to others and to build off other people’s work. So we do and we ask the Mexican engineers many questions. We don’t do that with the American engineers.

Indian engineers remarked that they learned more when working with Mexican engineers than with U.S. engineers because the former encouraged and engaged them in collaboration and interaction while the latter did not. Consequently, as one Indian engineer noted, “I can see that in a few years we’ll be equals in skill to the Mexican engineers because of their help and because of this we sometimes try harder on projects for them than for people in the U.S.”

Discussion

At least three findings from this study have important implications for theory about and management of global interactions in the workplace. The first finding is that, within a particular occupational community, individuals form stereotypes about the way their colleagues in other countries work, and of how they themselves work, that confound occupational and national culture membership identities. The second finding is that when individuals believe that work practices are distinct across cultures, perceived differences in status can activate behaviors aimed at either reconciling those divergent stereotypes or maintaining them. The third finding is that pursuing strategies aimed at maintaining or correcting stereotypical work practices can have important consequences for attributions of competence and skill, and, untimely, may affect the ongoing nature of global work.

Activation of Occupational Stereotypes

Most research on the effects of stereotypes on individual behavior is conducted in the laboratory where researchers activate particular stereotypes (e.g. race, ethnicity, age) and examine how research subjects respond (Wheeler & Petty, 2001). Consequently, our understanding of what situations or processes activate stereotypes in the workplace is quite limited. The findings presented in this study demonstrated that individuals sometimes form stereotypes of people
working in other countries when, during interaction, they hear explanations proffered by those people about how they accomplished work tasks and those explanations seem markedly different from how the individual hearing them works. As the literature consistently shows, individuals who are separated from their work colleagues by great temporal and spatial distances have few opportunities for the type of interpersonal interaction that individuates their communication partners and creates strong social bonds (Gelfand, et al., 2007; Kankanhalli, Tan, & Wei, 2006). Moreover, the fact that most communication on global teams happens today via technologies, which make rich social interaction difficult, decreases the likelihood that individuating interactions will occur (Hinds & Bailey, 2003). And as theorists suggest, without interactions that help people to individuate one another, stereotypes are likely to be used to deal with the cognitive complexity of interacting with unknown others (Fiske, 1993; Macrae, Milne, & Bodenhausen, 1994). Our data provide a clear illustration of this seeming paradox, as engineers in Mexico and in the States interacted as much as three times a day but did so in a stereotypical way because of the formal and task-based nature of their collaboration. Thus when managers decide to promote cross-country interaction in the global organization amongst individuals who are not well known to each other, they may be creating a fertile environment for culture-based occupational stereotypes to grow.

Of course, creating fertile ground is no guarantee that growth will occur. In this study, occupational stereotypes were activated when Mexican engineers perceived that their counterparts in the U.S. or India worked differently than they did. Recognition of such differences led them to the conclusion that U.S and Indian engineers must notice these differences too and, consequently, think of the Mexican engineers in stereotypical ways. Such projected thinking encouraged Mexican engineers to consider what stereotypes others must hold of them and react. Such a finding aligns with extant research showing that stereotypes may affect both how individuals treat one another and how they view themselves (Goff, et al., 2008; Yoon & Hollingshead, 2010). But
these findings push the extant literature forward by demonstrating that such processes are related—not separate as they are traditionally viewed. Mexican engineers only questioned what others thought of them as they themselves thought about their perceptions of how colleagues in other countries worked and realized that others must hold perceptions of them as well.

These findings suggest that stereotype activation is a process involving the reciprocal construction of self- and other-stereotypes as individuals draw from their available cultural repertoires. As people form stereotypes of others, they may begin to wonder what stereotypes others hold of them. Such recognition can lead to reflexive monitoring of one’s own practice that occasions behaviors attempting to confirm or negate the perceptions he or she believes others hold of him or her. In short, to understand why people act the way they do, we may be well advised to focus on the degree to which they stereotype others.

**Perceived Status Differences and Communication of Behavior**

Perhaps the most surprising finding from this study is that perceived status differences shape behavior in important ways when individuals hold stereotypes of others and believe that others hold stereotypes of them. The literature on stereotypes in interpersonal interaction has had a great deal to say on the role of power and status in shaping behavior. A strong stream of work argues that people who hold high status positions are likely to engage in stereotyping because they have little interest or motivation to learn the specifics of those with whom they interact, or they are so busy that it would take too much time and cognitive processing to learn individuating information that would keep stereotypes at bay (Fiske, 1993; Galinsky & Moskowitz, 2000; Goodwin, Gubin, Fiske, & Yzerbyt, 2000). Such intentions held by, or pressures placed on, high status individuals decrease the likelihood that they will become familiar with others, which is hypothesized to reduce one’s reliance on stereotypes to guide interaction. But little attention has been paid to the way that status affects the behavior of those who feel stereotyped.
In this study, Mexican engineers recognized that the stereotypes they believed others held of them did not align with the stereotypes they held of U.S. and Indian engineers. Mexican engineers also perceived that U.S. engineers felt that they held higher status than Mexican engineers, in large part because they believed U.S. engineers negatively stereotyped their work styles. Thus, because Mexican engineers wanted U.S. colleagues to treat them as status equals, they told U.S. engineers stories about the way they worked that were not entirely true, but were aimed at making U.S. engineers think that Mexican engineers did not work in a stereotyped way. Put another way, Mexican engineers told the U.S. engineers what they believed the U.S. engineers wanted to hear. By contrast, Mexican engineers were forthcoming with Indian engineers about the way they worked. Because they felt they were higher status than the Indian engineers, Mexican engineers believed that they could shape the way Indian engineers worked if they led by example.

Several recent studies have documented tremendous status imbalances that threaten the successful completion of work in global organizations (e.g. Levina & Vaast, 2008; Metiu, 2006). Previous research has shown that status imbalances can arise when global teams are staffed with core members and then receive additional support from temporary team members from other countries, thus resulting in in-group/out-group status delineations (Gibbs, 2009b). With the increase of global organizational arrangements such as offshore sourcing and the foundation of business units in countries with little experience in the company’s product domain, organizations are likely to see an increase in perceived status differences among employees. This study suggests that if those perceived status differences align with occupational stereotypes, individuals may feel compelled to either change their behaviors in an attempt to achieve higher status or, as occurred in the research presented herein, change what they tell other people about their behaviors. Consequently, the self-perpetuation of occupational stereotypes may impede teaching and learning in organizations because individuals do not communicate what they actually did to complete a
work task; instead, they feel compelled to communicate information confirming what they think others wanted them to do to complete tasks. When communication is distorted in this way, it is difficult for the organization to have a strong sense of what types of behaviors are truly effective in completing important work tasks.

**Stereotypes, Culture, and Status: Effects for Ongoing Working Relations**

As the data presented above show, engineers in different countries had slightly different ways of working and orienting toward the occupational role of engineer. These differences were largely the product of different mixings of the kaleidoscopic reservoir of cultural identities available for them to draw on to construct meaning about their work (Gibbs, 2009a). The Mexican engineers, at least, used these cultural reservoirs to produce and sustain stereotypes of engineers in other countries as well as perceptions of how engineers in other countries stereotyped them. Consequently, our findings suggest that the communicative behaviors that perceived status differences produce may have important long-term effects on working relations in global organizations. U.S. engineers in this study noticed that Mexican engineers often told them that they worked alone, did not follow work guidelines, and refrained from consulting with others about work. Consequently, U.S. engineers began to form impressions that Mexican engineers were not thorough, competent, or committed to the success of projects. The irony, of course, is that Mexican engineers did work collaboratively with others, did follow guidelines, and did seek advice from others, but told U.S. engineers that they worked differently than this because they thought that was what the U.S. engineers wanted to hear.

One might think that when working together over time, individuals from one culture would come to realize that the reports their colleagues in another culture make about their work are inaccurate, and that, consequently, stereotyping would decrease. However, recent research by Smith et al. (2006) demonstrates that when familiarity is decoupled from liking and individuated
knowledge, frequent interaction can lead to even more stereotyping than infrequent interaction because familiar objects receive less systematic analytic processing. The result may be that one’s inaccurate communication of his or her work styles, which is done to overcome perceived status differentials, may not be detected by a person from another culture. Instead, individuals may increase their stereotyping and choose, as did the U.S. engineers in this study, to not send work to Mexico because they believed that Mexican engineers were not capable. To combat this problem, it may be wise for managers to make time and find a budget for global communication partners to visit each other’s workplaces occasionally so that they learn how they work and, consequently, refrain from stereotyping based on lack of knowledge. Further, such site visits may stop individuals from forming perceptions that others have stereotyped them because they will have confidence that a visit to their site has ensured that the visitor now understands that they are competent workers.

**Conclusion**

As Hinds et al. (2011) recently observed, most existing research that focuses on communication within global organizations has overlooked the important role that intercultural interactions play in shaping work behaviors. This ethnographic study has shown that, at least for employees in one large multinational corporation, national cultural differences permeate their daily experience of the workplace. However, the data also paint a more complicated picture, in line with other studies showing that national culture is not a sole actor in shaping the actions of global organizational members (e.g. Gelfand, et al., 2007; Gibbs, 2009a; Gibson & Gibbs, 2006; Stohl, 2001) by showing that those cultural differences become most salient when they are implicated in occupational stereotypes and activated through the perception of status differences.
References


Kurz, T., & Lyons, A. (2007). Intergroup influences on the stereotype consistency bias in communication: Does it matter who we are communicating about and to whom we are communicating? *Social Cognition, 27*, 893-904.


### Table 1

**Summary of Mexican Engineers’ Actual and Communicated Practices**

<table>
<thead>
<tr>
<th>Stereotype Category</th>
<th>Practice (Actual or Communicated)</th>
<th>Actual Practices</th>
<th>Communicated Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>21 Observations</td>
<td>Mexico to Mexico</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Consultation</td>
<td>Decide on Solution Alone</td>
<td>11</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Seek Advice to Find Solution</td>
<td>22</td>
<td>67</td>
</tr>
<tr>
<td>Collaboration</td>
<td>Start Work from Scratch</td>
<td>8</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Build From Other’s Work</td>
<td>18</td>
<td>69</td>
</tr>
<tr>
<td>Innovation</td>
<td>Attempt New Procedure</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Follow Existing Procedure</td>
<td>18</td>
<td>95</td>
</tr>
</tbody>
</table>

1. One Mexican engineer shadowed per observation. Average duration of observation = 4.5 hours.
2. Numbers in this column represent instances across all observations. Some rows show more practices than the 21 observations because there were, occasionally, multiple practices enacted in a single observation.
3. Numbers in these columns do not sum to total number of interactions observed because engineers did not communicate each practice in every interaction.