INCREASING THE REPRESENTATION OF WOMEN FACULTY IN STEM DEPARTMENTS: WHAT MAKES A DIFFERENCE?

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Our focus in this paper is on the process of increasing the representation of women in STEM as it occurred in academic departments within a research university explicitly committed to diversifying the faculty in science and engineering fields. We used thematic analysis of interviews with 59 senior faculty drawn from 20 departments to identify forces that enabled or constrained demographic change over 13 years. The accounts by faculty from departments that most increased the representation of women included references to four enabling forces (open recognition of a serious problem coupled with shame about past circumstances; strong leadership on diversity from one or more department chairs; change-enabling features of the departmental and disciplinary context; and proactivity in pursuing diversity). The accounts by faculty from departments that did not increase diversity at all included reference to three constraining forces (viewing other priorities as more important than diversity; external factors that constrain or limit the possibility of change; and unfavorable features of the departmental context). Departments that increased faculty diversity somewhat expressed some enabling and some constraining forces, and omitted some. We discuss the implications of these findings for successful departmental change, particularly in the context of larger institutional change efforts.

KEY WORDS: *institutional change, diversity, representation of women*

1. INTRODUCTION

In 2001, the National Science Foundation announced an initiative to encourage "institutional transformation" in higher education to address the underrepresentation of women in high-ranking faculty roles. The request for proposals yielded 72 proposals, and 9 institutions, one of which is studied here, were awarded substantial "cooperative agreements" totaling nearly $5 million in awards to each institution, to be expended over 5 years. The institution studied here was selected in that first wave of institutions, but it had a history of having engaged in many other local initiatives aimed at increasing diversity and inclusion throughout the institution, including creation of incentives for hiring diverse faculty, and resources to support hiring partners of candidates for faculty positions. The ADVANCE IT program was different from previous local activities in that it focused on STEM fields in particular. Moreover, the ADVANCE initiative pointed much more directly at broad institutional issues as the cause of women's underrepresentation. The NSF

program solicitation† indicated that: "There is increasing recognition that the lack of women's full participation at the senior level of academe is often a systemic consequence of academic culture." The program solicitation emphasized the *culture* of *academic environments* as a target of change in attempting to increase women's participation in science and engineering. The solicitation further noted that: "The project may be directed at review and transformation of one or more departments or schools of science or engineering, or of an entire institution or system." †Program Solicitation 01-69 for ADVANCE Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers; retrieved 7-22-2013 from http://www.nsf.gov/pubs/2001/nsf0169/nsf0169.htm

At the end of the initial grant, the institution committed continued internal funding for an additional 5 years for the activities that had been initiated with NSF support but with a broader mission beyond the STEM fields, and encompassing racial-ethnic and other forms of diversity, and then recommitted for another 5 years. A number of important faculty-related policies were altered during this period, in support of institutional transformation. Thus the program, which began as a grant outside the formal administrative structure, eventually became a university program reporting to the Provost's office. That said, it was women faculty in STEM fields that received sustained attention over the full period being examined here, so we adopted a narrow focus on departments in those fields in this study.

1.1 Factors that Promote Increased Representation of Women

Considerable research has reported on specific features of academic environments that have been associated with increased hiring, retention, and promotion of women faculty in STEM fields at institutions associated with ADVANCE institutional change efforts (see especially Bilimoria and Liang, 2012; Carnes et al., 2012; Stewart et al., 2007). Equally, some have reported on the relationship between the overall climate in institutions (though rarely in academic departments) and faculty job satisfaction and well-being (McCoy et al., 2013; Settles et al., 2006; Settles et al., 2007; Settles et al., 2012). Gray et al. (2012) pointed to the importance of organizational context in studying change, including history and power dynamics. Jordan and Bilimoria (2007) identified features of a positive academic department that they believed would foster change, and Wolverton et al. (1998) discussed factors that might promote or inhibit change in departments. All of this research stresses the importance of department characteristics both in making changes and in faculty experience. However, we know very little of how top-down and bottom-up change efforts converge in departments and in particular no previous study compared features and faculty experiences of academic departments that succeeded in making desired changes and those that did not.

1.2 Increasing the Representation of Women as a Process of Institution-Level Change

NSF pointed ADVANCE grantees toward institutional change, and indeed a great deal of ink has been shed about organizational change, including change in higher education. Much of this literature directly or indirectly grapples with recognition that very few change efforts succeed. For example, Kegan and Lahey (2009, p.1) cite evidence that as few as 1 in 7 individual change efforts succeed, and organizational change efforts are even less likely to succeed. This reality sets the stage for a painful dilemma facing those who believe that higher education—and perhaps

especially science and engineering in the academy—must make dramatic changes in the diversity of the faculty and students in the "pipeline" as well as in curricular, pedagogical, and other institutional practices (see, for example, Gurin et al., 2004; Glass and Minotte, 2010; National Academy of Engineering, 2014; Smith et al., 2004; Stockdill and Danico, 2012; Xie and Shauman, 2005). Change is important, even essential, but it is also very difficult to achieve.

Research on institutional change in higher education has offered road maps and strategies for institutions and leaders that hope to change, for example, by increasing demographic diversity (Chesler et al., 2005; Smith et al., 2004; Sturm, 2006), and case exemplars of successful change (Maher and Tetreault, 2007). Many studies have emphasized the importance of institutional leaders in creating or fostering change (Kezar et al., 2006; Kotter, 1996; Lucas, 2000), though recently there is increased emphasis on "grassroots" academic leaders who catalyze institutional change without the positional authority to implement it (Kezar and Lester, 2011; see also Astin and Leland, 1991).

Although little is known about how the different levels of a higher education institution influence each other, it is widely assumed that they do (see, e.g., Rafferty et al., 2012). It is often asserted that pressure for institutional change exerted by upper-level administrators (presidents, provosts, deans in the academic context) facilitates change at lower levels (Bolman and Gallos, 2011; Kotter, 1996; Rost, 1991). Kezar and Lester (2011) demonstrated the reverse: grassroots change efforts ("bottom-up" approaches) are most effective when they "converge" with top-down efforts to implement it (Kezar and Lester, 2011; see also Astin and Leland, 1991). In universities, "bottom-up" approaches converge with top-down initiatives most clearly in academic departments. However, there is little research aimed at understanding when and how academic departments actually change (see Buckley and Grigsby, 2011, for an exception).

1.3   Departmental Change as the Focus

Our focus in this paper is on the process of institutional change as it occurs in the "home base" of most academic faculty: the department (Lucas, 2000). This study was conducted in the context of one research university's experience with an explicit institutional change effort focused on science and engineering, over a 13-year period. The institutional context included many cultural change-promoting factors: explicit institutional commitment to increasing faculty diversity, transformation of institutional policies and practices to make them more inclusive, and the creation of resources to support institutional change. All of these elements were no doubt important factors in the larger institution's relative success in this project. We chose to measure demographic change in the faculty as an outcome that reflects multiple potential internal changes (recruitment, retention, and promotion, as well as climate changes that enable those); it is, then, a concrete product of broader culture change. Our aim in this study, though, is to identify the features of *departments* that responded to the programmatic institutional preoccupation with change by becoming more diverse themselves. We chose the focus on departments because they are key domains within higher education institutions, especially for the faculty, for whom they are the central face-to-face daily community. This is particularly true for major research universities, since in these settings departments are not only the locus of hiring, firing, promotion, and tenure of faculty, but also of both graduate and undergraduate education. For departments in science and engineering fields, they are also inevitably the locus of faculty scholarship and research training of graduate and undergraduate students.

Departments are where bottom-up and top-down change efforts may converge, but they are also locations where faculty may work to avoid change. Departments (and the individuals within

them) can embrace larger institutional initiatives, ignore them, or resist them. Departments can be catalyzed by grassroots momentum or squash it. For that reason, we believe it is crucial to include attention to factors that may affect their likelihood of engaging in diversifying change efforts within the context of an overall institutional effort. In the end, especially in science and engineering fields, if there is no change at the department level, there is no meaningful change at all.

1.4   Theoretical Framework

The theory of organizational and individual change articulated by Kegan and Lahey (2009), which demonstrates how a commitment to a particular change must be understood alongside the various other value commitments and assumptions that may conflict with that commitment to change, was particularly useful for this study. Kegan and Lahey argue that only by unpacking and addressing these contradictory forces can change occur. In a related account, Grenny et al. (2013) outline six sources of influence (personal, social, and structural levels of motivation and ability), and demonstrate that only when all of these levels are mobilized is change likely to be sustainable. They, too, point to the importance of addressing what people feel they cannot do as well as what they do not really want to do, in bringing about change. Both of these accounts focus, then, not only on the positive motivations for change that must underlie any change effort, but also the unacknowledged obstacles to change that can prevent it. Both theories draw on the field theory of Lewin (1951), stressing that there are forces in any field of action that support change, and there are also forces that oppose it (see also Chesler et al., pp. 180–186). Swanson and Creed (2014) have argued recently that the "inverse principle" (based on the notion that there are two polarities to every force in the field) is critical to an appropriately complex Lewinian analysis of change. Specifically, Lewin understood that a factor initially seen as enabling change may become a constraining force, or barrier to change, if (for example) it is perceived as an alternative to actual performance. One example they offer is community structures for recycling (separate bins for different kinds of waste, posters about separating types of waste materials, etc.), which can paradoxically undermine individuals' motivation to change their trash-organizing behavior, by seeming to take care of the problem. Thus highly-visible community resources can substitute for real behavior change (becoming a constraining force) rather than enabling it. Equally, barriers to change or constraining forces can be transformed into enabling forces if they are recast as reasons for change; thus, for example, recognition of the urgency of climate change can motivate commitment to reducing carbon gas emission. This bidirectional process is illustrated in Fig. 1, as is the importance of having enabling forces outweigh constraining forces, if change is actually to happen. We will draw on the concepts of enabling and constraining forces, and the inverse principle, in considering how and why some departments within a single institution succeeded in making change happen while others did not, even though all of them voiced an explicit commitment to the change goal. Our aim, then, is to shed light on how in particular departments constraining forces were transformed into enabling ones, and—when that sort of synergy did not occur—how some enabling forces became barriers to the sought-after change.

   We examined this process in the context of a larger institutional effort to create change—one that was supported by external funding, internal leadership from the top, and by internal financial support and institutional program efforts. In order to do so, we adopted an inductive approach to identifying features that characterize departments that changed substantially and those that did not. Our examination was grounded in the theoretical assumptions outlined above. That is, we recognized that under some circumstances departments could benefit from synergies between
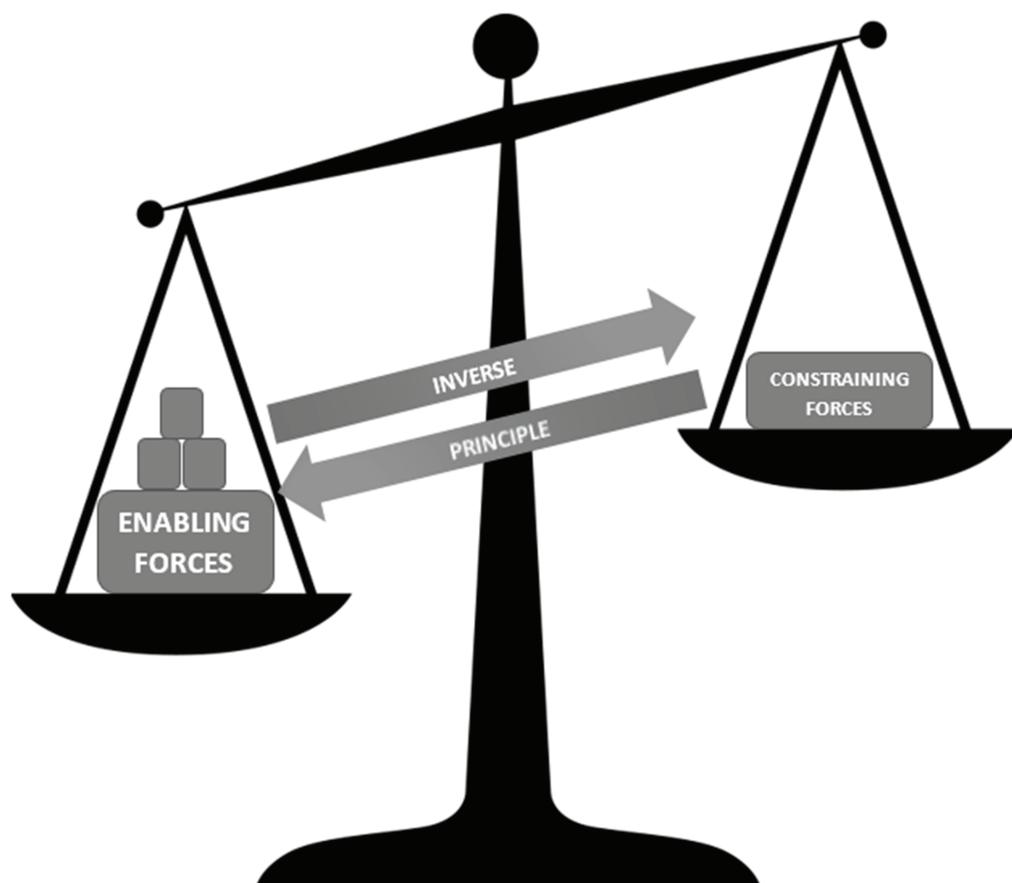
FIG. 1: A system changes when enabling forces outweigh constraining forces

their own change goals and those of the larger institution, but under other circumstances departments might not. By focusing on both enabling and constraining forces as experienced within the departments, we aimed to develop a deeper understanding of when cross-level synergies result in successful departmental change, and when they do not. Unpacking how the inverse principle results in the conversion of enabling forces and barriers to change into each other is a crucial element in understanding how change both does and does not happen in this context.

2. METHOD

This study employed thematic analysis (Braun and Clarke, 2006; Boyatzis, 1998; Smith, 1992) of interviews as a strategy for identifying the differences between departments that showed substantial, some, or little or no demographic change over the 13 years extending from the time before the ADVANCE Program existed on the campus until 2013. This method aims to identify themes

within interview transcripts, and begins the process of developing a theoretical understanding of departmental change (per "grounded theory" approaches; see, e.g., Glaser, 1992; Hallberg, 2006; Strauss and Corbin, 1998).

Thematic analysis is an inductive procedure in the sense that it does not begin from theoretical propositions or hypotheses, but instead focuses on the data (in this case, texts of transcripts). However, it does not assume that research can or should avoid presuppositions. We assumed that faculty would be able to articulate their perceptions of "enabling and constraining forces" with respect to the process of diversifying the faculty. We also bore in mind that these could be converted into each other, according to the inverse principle. More narrowly, we assumed that leadership might operate as either an enabling or constraining force, given the emphasis in the literature. Apart from those notions, we had only broad ideas in advance, such as: Might having senior women in the department be important? Might the support of particular opinion leaders—or its absence—be crucial? In addressing these issues we focused on comparisons of departments that changed a lot during the period of close attention to "institutional transformation" in terms of diversity and those that did not change (see Glaser, 1992, for method of constant comparison). This comparison of groups allowed us to identify themes that differentiated the narratives of faculty from different kinds of departments from each other.

2.1 Participants and Context

The institutional context was a research-intensive university in the Midwest that had engaged in a variety of diversity initiatives over the preceding decade. As noted earlier, the first 6 years of this institution's ADVANCE Program focused solely on hiring and advancement of women faculty at all levels within STEM fields. In the seventh year the focus was broadened to include all fields and racial-ethnic and other forms of diversity. However, given that the sustained effort was limited to STEM departments and gender diversity, we limited our analysis in this study to gender diversity in STEM departments. Twenty STEM departments were studied, drawn from the two colleges within the university that had the largest number of STEM departments (the engineering and liberal arts colleges). Across the 20 departments, 59 senior faculty and department chairs were interviewed. In most cases 3 individuals were interviewed in each department, but in 3 cases 4 were interviewed, and in 4 only 2 were interviewed. Twenty-two interviewees were women; 37 were men. In each department at least one chair and one other senior faculty member was interviewed; in all but one case, a senior woman was included. In addition, past chairs (N=10) were interviewed when possible; other senior faculty (N=6) were selected if they were thought by either of the first 2 interviewees to be able to provide valuable perspective, particularly over time in the department. Most interviewees (N=49) were European American, but 7 were Asian or Asian American, and 3 were from domestic underrepresented minority groups (African American, Latino, or Native American).

2.2 Procedures

Interview procedures. All individuals were informed about the goals of the study and consented to being interviewed; all but 4 agreed to having the interview audio-recorded and transcribed for data analysis. In these 4 cases the interviewer took detailed notes during the interview. All interviews were conducted by either the first or second author, who were known to the interviewees to be core staff of the ADVANCE Program (a potential limitation discussed later). However, departments were not categorized into change groups before the interviews.

Interviews were professionally transcribed and then checked against the original tape and coded by the authors.

The interview began with the interviewer showing the interviewee a timeline on which three kinds of information were indicated: (1) the year-by-year N of women faculty in the department; (2) the year-by-year N of underrepresented minority faculty in the department; and (3) key university-wide dates (appointment of upper administrators, deans, etc.), as well as dates specific to the ADVANCE Program on campus and to the department (e.g., changes in chairs, participation in ADVANCE programs, etc.). Participants were asked to describe how their own timeline (when they came to campus, and the milestones in their own careers) intersected with this departmental timeline, and then to discuss their view of how the department had changed in between, beginning when they came to the department and including the ADVANCE period from 2002 to 2013. They were free to talk about any kinds of changes (and some did discuss curricular, organizational, and other sorts of changes during this period), but they were always specifically asked to think of things that might have made it more likely that the department faculty would become "more diverse," as well as factors that might have been barriers to increasing diversity. The interview ended with a focus on the future and their prediction about whether and how things might change in terms of diversity of the faculty. Though all interviewees were asked the same broad questions, the precise conversation depended on the account of events that the individual offered, with the interviewer following up when there was ambiguity. Because the interviews involved reflection on past events and circumstances, they depended on faculty members' memories for those events, and probably also the departmental narratives that surrounded them in the present. From our perspective, these limitations to the data were acceptable, since our goal was not assessment of individuals' accounts or identification of exactly "what happened," but some sense of department-level consensus on key factors enabling or constraining change. Thus, we focused on themes that arose across different interviewees within a single department and across departments within a group.

Classification of departments. After the interviews were completed, departments were classified in terms of the amount of demographic change in the tenured and tenure track faculty evidenced in the 13-year period, recognizing that this kind of change is inevitably slow, given the constraint that a large proportion of faculty is tenured at the beginning of the period and unlikely to change. Bilimoria and Liang (2012) identified the average proportion of increase in women faculty at 19 ADVANCE IT-funded institutions as 3.5% over an average of 6 years. Over twice that period, one could expect only about 7% average change; this institution's overall average across the 20 departments was 7.5%.

We relied on the proportion of women tenured and tenure track faculty in the department as the key indicator of change, but recognized that proportions are influenced by the overall size of the department (they may appear large in small departments because a single hire changes the proportion more), and that proportions would be affected by changes in the size of the department (the denominator) even if there were no women hired or departing. In order to avoid relying unduly on these kinds of data from a single year, we averaged the proportion of women faculty in 2001 and 2002 as the starting point, and 2012 and 2013 as the end point.

Departments were classified into three groups. *Substantial change* was defined as an increase in the proportion of women of at least 10% over the period; the average increase across the departments in this category was 13%.

Some change was defined as an increase in the proportion of women faculty by 5%–9% over the period; the average increase for departments in this category was 7%, or about half as much as the substantial change departments.

Little or no change in the proportion of women faculty was defined as less than 5%; average change for this group was 2%.

Across the 20 departments, the proportion of women faculty had changed substantially in seven, seven had changed some, and six showed little or no change. Table 1 shows the mean percentage of women for each group at the two time points, reflecting the magnitude of change in the three groups in quantitative terms. It shows that there is a significant group´time interaction (F=10.22, p<.001), and subsequent post hoc comparisons show that the substantial change group and the some change group both showed statistically significant change in the percentage of women over the relevant period (p<.05), but the no change group did not. One-way ANOVAs within time showed that the three groups did not differ significantly at Time 1 [$F(2,17)$=1.53, ns], but they did at Time 2 [$F(2,17)$=5.20, p<.05], with the little or no change group having a significantly lower proportion of women than the other two groups at Time 2 (p<.05); the substantial and some change groups did not differ significantly in the amount of change. The three groups of departments did not differ in size during this period. They did differ in the rate of women chairs of departments: the substantial change group included four (of seven) departments that had a woman chair at some time during the 13-year period; the moderate change group had three women chairs (in seven departments) at some point; and the no change group had none.

Coding procedures. Because our goal was to identify the enabling forces and barriers to change across departments, we began by contrasting themes mentioned in faculty interviews drawn from the two groups that had made the most and the least change. Following procedures outlined in Smith (1992) and Boyatzis (1998), we began by reading 12 interviews from both groups, using the process of constant comparison (Glaser, 1992). One of the coauthors (AJS) read these 24 interviews and developed a working list of 15 themes she felt characterized the two groups, eight for those that made the most change and seven for those that made the least. The other coauthors reviewed the list in light of the same interviews, clarified categories, and added

TABLE 1: Percent female faculty over time, by groups of departments

Department group	Mean and (standard error) at:	
	Time 1	Time 2
Substantial change (*n*=7)	14.56[a]	28.08[a,1]
	(2.71)	(1.63)
Some change (*n*=7)	20.08[b]	26.96[b,2]
	(2.71)	(1.63)
No change (*n*=6)	20.77	20.81[1,2]
	(2.92)	(1.76)

F (group)=0.51, *df*=2, *p*=ns
F (time)=32.07, *df*=1, *p*<.001
F (group×time)=10.22, *df*=2, *p*=.001

[a]The over time pair of means significantly different at *p*<.001
[b]The over time pair of means significantly different at *p*=.003
[1]The within time pair of means significantly different at *p*=.02
[2]The within time pair of means significantly different at *p*=.05

examples and one new theme (for a total of 16). The authors reviewed all of the remaining interviews, including those from the some change group, using a similar process, and concluded that no new themes had emerged. Finally, one coder (AJS) organized the existing themes into seven more integrated categories.

Four broad categories articulated enabling forces that were described as characterizing the departments with the most change:

- *open recognition of a serious problem coupled with shame about past circumstances*
- *strong leadership on diversity from one or more department chairs*
- *change-enabling features of the departmental or disciplinary context (included the increase in people "on board" or willing to advocate change, increased ability to talk about racial-ethnic and sexual minorities, and generational turnover)*
- *proactivity in pursuing diversity (including focus on the climate, the pipeline, proactive searching, use of university-wide resources)*

Three broad categories outlined constraining forces, or barriers to change, and characterized the descriptions of departments with the least change:

- *viewing other priorities as more important than diversity*
- *external factors (such as the pipeline and hiring/retention difficulties) that constrain change*
- *unfavorable features of the departmental context (discussions of diversity are difficult, there are few advocates, a few vocal opponents, department size—both large and small—is a problem)*

A mix of these seven broad themes also characterized the departments with some change; therefore, we will describe the themes for the substantial and no change groups first, and those for the some change group last. The distribution of themes by group is presented in Table 2. We will discuss these themes in detail, with examples, as we describe the results of our analysis.

3. RESULTS

3.1   Departments with Substantial Change

Interviewees from these departments outlined four major enabling forces that characterized their recent history.

3.2   Open Recognition of a Serious Problem Coupled with Shame about Past Circumstances

Perhaps the most striking feature of interviews with faculty from departments that had experienced substantial change is that virtually all of them referred to embarrassing or shameful episodes in the department's history involving women faculty or their absence. Problems ranged from failures to hire or retain women faculty; tenure denials that were painful and divisive, or were viewed in retrospect as avoidable; failures to live up to startup promises to women faculty; and episodes of serious sexual harassment. Many interviewees indicated that the department shared a desire to overcome that history and accomplish diversity successfully now and in the

TABLE 2: Themes reflecting enabling and constraining forces in three types of departments

	Substantial change departments	Moderate change departments	No change departments
Enabling forces			
Open recognition of department's role in problem	• Acceptance that there is/had been a problem and that success depended on doing things differently		
Formal and informal leadership	• Provided modeling and direction • Served as counterweight to problematic faculty		
Favorable departmental context	• Large pool • Faculty who were "on board"/supported diversity • Key retirements/generational turnover • Presence of respected senior women		
Proactivity	• Efforts to enhance female candidates' visits • Attention to search committee membership • Open searches/improved review processes • Management of difficult personalities • Active use of University resources		
Constraining forces			
Other priorities			• Emphasis on quality as different from, and more important than, diversity • Mention of other factors, such as "fit" that are more important than diversity
External factors		• Limited diversity of pool • Difficulty of dual career hires • Women candidates' decision-making viewed as idiosyncratic	
Unfavorable departmental context		• Doubt about ability to change further • Difficult personalities/faculty not "on board" • Negative dynamics/climate • Sexism	

future, thereby reflecting the inverse principle of transformation of a potential barrier into a motivation for change.

Faculty interviewees in some departments indicated that the department had hired several young women in the distant past, and more than one was denied tenure or left before the review. They described being unsure "what went wrong," but they felt responsible for these events, and viewed them as departmental failures that composed a "painful history." One faculty member said: "There were a lot of things we did wrong. We didn't understand about mentoring then." Another recounted the department's open discussion about the absence of women faculty: "You couldn't just ignore the elephant in the room." In another department "there was a fairly terrible episode in the 70s" which reverberated for many years, and people in the department—whether there at the time or not—felt embarrassed by what had happened.

Sometimes departments focused on their reputations in light of their difficult histories, but here too they confronted that reputation directly. In these cases, departments were conscious of some level of stigma—either in the discipline or in the university—as a negative factor or barrier in their recruitment efforts. One interviewee recounted an episode when the dean witnessed a department faculty member making a disparaging and sexist comment in a meeting. In a remark that stung other faculty, the dean indicated that statements like that accounted for the department's failure to recruit women faculty. In other cases, "these stories went through the community. And it was very hard to persuade any woman to consider an offer."

In some departments more than one issue was recognized at the same time. For example, in more than one department there were faculty pressing for changes in the level of transparency in departmental procedures. In another, some faculty were concerned about the low level of civil exchange in departmental interactions. In these cases, addressing the lack of diversity in the faculty was part of a more general desire to make changes in the departmental culture. In all of these departments there was a recognition that there were features of the department that needed to change, and that recognition was openly acknowledged. It was noticeable in these departments that none of the faculty accounts we obtained attempted to justify or explain the history away; instead, they accepted that there had been, or was now, a genuine problem, and success at diversifying the faculty depended on changing perceptions by doing things differently, thereby transforming barriers to enabling forces.

3.3   Strong Leadership on Diversity from One or More Department Chairs

Faculty from all departments that experienced substantial change pointed to strong leadership from at least one department chair as an important enabling force in the change process. Department chairs were described by other faculty as doing a range of things that count as "leadership": careful selection of people to serve on and chair key committees (such as search committees), open discussion of faculty diversity as a high priority and articulation that this goal did not compromise a high priority on excellence, as well as playing a proactive role in recruitment and retention.

These chairs were clear that, in order to recruit and retain women faculty, the departmental climate would need to change to address their needs, but they also recognized that women faculty want their professional identities to be at the center of their relationships to the department. One chair was described this way:

> [He] both felt really strongly that we really need to fix this diversity issue in the department, and also that we needed to diversify the fields we were involved in.

A woman faculty member recruited by another chair in this group commented,

> He made it clear that he recognizes the different issues [largely family concerns] I was going to be dealing with… [I] fully expected that there would be people who I was uncomfortable with in terms of all these issues. But I felt like there are people I could go to that were going to back me up…and that frankly, [the chair] acted like he wanted me for my scholarship. I mean, he acted like, "Look at the great stuff you're doing and look at this fascinating paper, and in five years I see you doing this, and I can't wait to put you up for that award." I felt like he believed in what I could do, and he recognized that in doing that, I had other stuff that I cared about.

This open recognition that women faculty often have family-related needs and concerns that were different from those the department had encountered in the past, and that these women faculty were not less ambitious and dedicated to their careers as a result, made the critical difference in attracting this woman—and others like her—to these departments. Most of all, in this case the presence of a sympathetic and proactive department chair gave this woman confidence that she could tolerate climate challenges that she expected in the department.

Finally, department chairs in these departments acted to address the barriers posed by faculty hostile to diversity efforts. For example, one chair was frequently challenged by two men who (in one instance) raised objections to a departmental action taken after a unanimous departmental vote they had missed. In that case the chair messaged them saying, "We had a faculty meeting, we've been talking about this, it was a unanimous vote. I think that the department as a whole wants this." Direct confrontations like this were consistently described (often with surprise) as effective: "I have to say in my few experiences where I have actually directly challenged faculty, they crumble. You know, it's like I didn't know that would happen!" One chair sought out advice from a process expert about how to overcome the department's history of "rancor" and "shouting matches." In this case the chair noted that "if you don't allow that to happen, then other people start gradually being more willing to say things." In a similar situation, a different chair managed to alter negative dynamics, in which "the different pillars of the department were fighting with each other. So whenever a candidate came through… [they would feel] this is interesting to watch, but I don't want to be part of it." The great importance of department chairs rested on two factors: they provided modeling and direction to many other departmental faculty, and they served as a counterweight to potentially problematic faculty. In both ways they were viewed as addressing constraining forces or barriers and enabling departmental change.

3.4   Change-Enabling Features of the Departmental and Disciplinary Context

In all of the departments in this group, faculty noted things that had gone particularly well or were positive about the department's, or discipline's, makeup. In addition to departmental leadership, other factors mentioned included relatively large and strong cohorts of female doctoral students in their fields who provided "a pool of talent to draw on." Interviewees also pointed to an increase in the number of men in the department who were "on board" or "get it" and/or a decrease in the number of problematic opponents of diversity in the department (an example of barriers being transformed into enabling forces through generational turnover). In one department the addition of four senior faculty was a catalyst: "Any time you hire that many new senior people it provides the department lots of different ideas about how to do things…it gives the department a little bit more freedom to try things." Finally, the presence of one or more senior women who played

leadership roles beyond being chair, such as being active in searches or committees and serving as associate chair, also was noted as an enabling factor.

While these factors may have been objectively true of their departments, in many cases the "facts" were also true of the other groups. The difference may lie in the perspective articulated—a change in the departmental climate that created a discourse emphasizing that particular departmental or disciplinary features could be mobilized to increase the likelihood of success at making change. This point is consistent not only with the notion of enabling forces, but with the notion advanced by organizational theorist Jeffrey Ford (Ford, 1999; Ford and Ford, 1995) that "shifting conversations" is a key element in organizational change. Similarly, Wolverton et al. (1998, p. 212) stressed that departments must develop their capacity for "collective work, collective dialogue, and collective goals" if they are to be successful "double agents," serving as "intermediaries between institutional missions and faculty members."

3.5   Proactivity in Pursuing Diversity

Faculty in departments that had experienced substantial change reported many proactive and often creative efforts to increase diversity directly, and to address climate and other issues within the department that might limit diversity. In one department the chair used a small group of senior men as a planning group to help ensure that recruitment efforts went well: "We wanted things to go smoothly, and we knew it had been an old boy's club for a while—that was a barrier." This small group worked hard to make female job candidates' visits positive experiences for them, partly by self-consciously structuring ways to avoid the harmful effects of some particularly hostile department faculty members. Two women in another department described finally feeling "confident enough" after a couple of years to "say something about…pinup pictures all over the walls, which could not have been a very welcoming environment." In several departments more structured processes were created that limited the ability of a single person or small group to "go rogue" and derail departmental efforts. All of these are examples of directly removing barriers to change, thereby transforming constraints into enabling forces.

Some departments pointed to more aggressive outreach efforts: "We actually organized a seminar series where we brought in…about five women who were mid-career we thought were kind of on the way up." They used this approach to encourage their colleagues to recognize the diverse talent available, and at the same time to enable department faculty to identify some potential female prospects for recruitment. In several of these departments faculty named individual women scholars in the field they were keeping an eye on, and hoping to recruit in the future. Faculty also reported improved review processes, and made efforts to ensure that qualified candidates who would enhance diversity were not overlooked.

In addition, faculty in these departments described the value of the various programs this institution's ADVANCE program offered, as well as other institutional resources that supported their efforts. These resources were broadly available to all departments in the university, but faculty in these departments were able not only to name them as resources, but reported their reliance on them to transform their departments. For example, one chair noted, "Certainly it would have been very difficult for me to talk about these issues in a credible way in the department without the information I'd learned through [participation in ADVANCE activities]." Others pointed to the ADVANCE faculty recruitment workshops, as well as the theater sketches and other programs aimed at improving the climate inside the department, as helping them address problems that interfered with recruitment or retention of women faculty.

In addition, many faculty in these departments commented on the availability of institutional hiring opportunity programs, as well as the value of shifting to broader search definitions, more vigorous use of the institution's dual career program, and increased openness to hiring couples—including gay or lesbian couples—within the department. In fact every department that made changes in this period reported reliance on these institutional resources as key to their ability to make change, thus taking advantage of the potential synergy of change efforts at multiple levels.

Several interviewees pointed to efforts to limit the impact of individual senior men who sometimes disrupted department meetings or processes. As noted above, in some cases, chairs directly confronted individuals who attempted to go around departmental actions, but in other cases senior faculty agreed among themselves jointly to intervene to prevent or address disruptive challenges.

In short, faculty in these departments articulated very directly their reliance on resources available as a result of top-level institutional commitments, as well as their own willingness to serve as grassroots advocates for change in their home departments. What is striking here is that faculty in many of these departments did report difficult individuals or dynamics that were obstacles or barriers to change, but did not view them as unchangeable; instead, they relied both on existing enabling resources and on addressing barriers to change, thereby maximizing the synergy of their departmental change effort and the overall institutional effort.

3.6   Departments with Little or No Change

Interviewees from departments with little or no change offered three primary reasons for the lack of change: (1) *viewing other priorities as more important than diversity*; (2) *external factors that constrain change*, and (3) *unfavorable features of the departmental context*. The overall impression created was that diversifying the faculty was both nearly impossible and not as important or desirable as some other goals. In some cases individual faculty expressed frustration with this situation and a personal desire for more change, but even they could identify few ways the department's demographic makeup might change in the future. Overall they focused exclusively on barriers to change and identified no enabling forces.

3.7   Viewing Other Priorities as More Important than Diversity

Perhaps the single point made most frequently by faculty in these departments was that faculty valued other priorities more than diversity. Though these departments often had individual faculty members (including chairs) who were eager to see more diversity, they felt that this was not a *shared* high priority, so that change was unlikely to be rapid or substantial in the future. The alternate goal was often expressed in terms of "quality" or "excellence," with the clear implication that these two priorities are not compatible. One example from many: "Look, we've got to just go hire the best people we can." A chair of a department in this group said, "A lot of people think 'I can judge on an absolute meritocracy. And I'm just going to do that, and I'm going to pick whoever's best,' so that's that. A lot of our faculty feel that way. And that would then lead you to these sort of random statistics, and a very long time constant… The consensus has been: to make a better department we will hire the best people we can, independent of anything. And we can in fact judge that. That was the consensus. And if that person was a woman, great, we'll do everything we can to get her. If that person was a man, great. And the fact that they were coming to us in a nine to one ratio, that's just the way it is."

In all of these cases, as well as in cases where interviewees pointed out the importance of candidate fit with departmental needs, the faculty expressed the view that the department does

value "diversity" and thinks it's important—just not the most important thing. Even more, unlike the departments that succeeded in increasing their diversity, these faculty expressed the view that focusing on "excellence" or "the best" is at odds with considering diversity.

3.8   External Factors Constrain Change

Interviewees from the departments that did not change frequently pointed to factors they viewed as outside the department's control as responsible for the lack of change in the rate of women faculty; these factors included the pool and/or the pipeline, dual career hiring issues, idiosyncratic and unavoidable difficulties with particular hiring or retention cases, and the inevitable slowness of the process.

Many department chairs and faculty in this group of departments emphasized the limited diversity of the pool. Typical comments included:

The pool is not that big, because [this field] is really, traditionally has been a White male dominated field… So I think that's a big challenge…

This emphasis on the small pool was often coupled with claiming the department is doing as well as, or better than, comparable peer departments nationally. One male department chair pointed out that:

You don't want to use other people's data as an excuse, but at least you can use them to calibrate where you stand, and sort of compare and set some goals and try to see the context of the discussion. So as abysmal as our diversity picture may seem, the surprising fact is that it's slightly better than the majority of the other top 10–15 places.

In addition, there was sometimes an emphasis on the issue of women's preferences. For example, one person pointed to women's "social" interests:

A lot of the data suggests that women are more interested in going into fields where they understand the connection between what they're doing and how it has an impact on society, how it might help people.

Another pointed to women's lack of enthusiasm for academic life:

We've had a lot of very well qualified graduate student PhDs who don't want to have the university professor's life. [One female graduate student]… doesn't want to be traveling all the time, going to conferences, going to program reviews, writing proposals, working, you know, the standard 80-, 90-hour day—hour a week. And so I don't know, but I think that is something that is keeping the pool down at about this level.

The size of the pool, then, was described by interviewees as small because women are making choices to avoid this field. Moreover, particular features of the academic life were viewed as unattractive to women (but apparently not to men), and inflexible and unavoidable. The combination of the pool and women's unique and idiosyncratic preferences were clearly perceived to pose intractable constraints on change.

Given this general view of the overall intractability of the problem, it is perhaps not surprising that, even though interviewees from these departments viewed dual career hiring as a necessary feature of faculty recruitment, they portrayed it as very difficult and unlikely to be successful. They mentioned many different kinds of problems, going well beyond identifying an appropriate position for the partner: for example, that partners may be initially satisfied but then grow less satisfied, and that institutional support is inadequate to deal with these changing situations. One individual pointed to the big change since he was hired, when his PhD wife and he "had to deal with this ourselves." His view was that "now for some reason, either because we

encourage people to bring up issues like this if they feel they should be brought to our attention, or because the [dual career] office is there, we seem to be dealing with more of these issues." Thus, in the view of the faculty from these departments, dual-career problems are onerous and the solutions are outside the department's control. This extends to some couples themselves, who were reported by one faculty member to always "optimize for the man"—that is, the couple accepts the best offer the man received, regardless of the strength of the offer to the woman.

When discussing particular efforts to recruit or retain women, many faculty in these departments emphasized that negative outcomes were completely idiosyncratic and, as a result, did not reveal any larger issues that the department should attempt to address. The net impression was that many women would turn down offers, and many of those who were successfully hired would leave, and there was nothing much the department could—or should—do to alter these outcomes. For example, one department chair outlined two failed recruitments of women faculty. In the first case the woman "chose to stay in the same part of the country" with her husband, who had a strong offer in another region, and in the other the woman "chose to go to [a corporation], completely different kind of offer, much, much larger salary, different responsibilities." In neither case did the chair raise the possibility that there might have been something that the department could have done that would have mattered, such as identifying a tenure-track position for the husband or providing some incentives (for example, research opportunities or freedom to choose research priorities and to consult).

In the case of retentions, some emphasized that their departments seemed to have lost a lot because "our numbers are so low that when you lose one, well, you know, that's a big percentage of our number." This department had lost several women, and the chair pointed out that "pretty much all of them were for personal reasons, not as far as I know anything in the department." This confidence that women were making individual decisions, uninfluenced by any features of the department or the institution, blocks faculty in these departments from thinking about and exploring efforts to change the pattern. In one case, loss of a particularly successful woman faculty member was first attributed to "the dual career issue." When asked if she had been given a counteroffer, the chair noted that she had been, then said that they had been "unable" to match the salary she had been offered at the other institution, because "given the years of experience and so forth, she would basically be higher paid than anybody else in the department." In fact, in two of these six departments, interviewees noted that retention of women faculty was impossible because matching the salary of the other institution would make the woman the highest-paid member of the department, apparently something they could not consider. Finally, several departures were attributed to inevitable opportunities arising in other institutions; in one case, a woman who left for a regular faculty position was nevertheless viewed as a likely future loss in any case: "She probably would have ended up being picked up by somebody into the administrative rank. And I think probably the same thing is going to happen to several of our more senior women faculty." These interviewees did not imagine that leadership or other opportunities within the institution might be an effective counter to this possibility.

Overall, the faculty in these departments pointed out that hiring is a process in which individual decision-making is paramount and outside the department's control; moreover, they viewed unsuccessful efforts at recruitment to be common. Equally, retention of female faculty was viewed as very difficult, as well as the result of idiosyncratic factors unlikely to be affected by any institutional or departmental actions. Thus, many constraining forces were identified, but no efforts to transform them were described. Instead, many individuals in these departments pointed out that the process of demographic change was inevitably slow. For example, one department chair emphasized that building the pool was the only solution to the problem, and "this

is a five-to-ten year thing." He felt that: "It's a sustained effort. It doesn't have to be necessarily a big, huge thing, but it needs to be something that—you know, that has meaning to it." Though this department chair believed this was the only possible successful strategy, he also felt that engaging in a long-term process of this sort was impossible in his department.

Putting these seemingly external and unalterable barriers together, faculty in these departments viewed the process of increasing the diversity of the faculty in their departments as improbable given the small pool of qualified candidates, dependent on highly-idiosyncratic individual decision-making, and inevitably slow and fraught with many failures.

3.9   Unfavorable Features of the Departmental Context

Faculty from departments with little or no change also pointed to many internal departmental factors that make change difficult. These ranged from observations that the hiring process is democratic and therefore "so many little things play into it," that women faculty members have high standards in judging other women ("sometimes women can be more negative about women candidates"), and the belief that "faculty are uncomfortable talking about" diversity. Many people pointed out that, although "everybody realizes that diversity is very important," "some people are not there." The point, from our perspective, is not whether or not these observations are true, but that they were asserted as obstacles with no expression of approaches to addressing or overcoming them.

In addition to these observations, some pointed to individual faculty within the department. For example, one described "a combination of personalities—if you put three of them together, it's kind of like a cancer." Sometimes individual qualities were mentioned; e.g., "It's an inflexibility, coupled with a really pretty aggressive bullying type of personality," but in the end, "these people were not supportive of diversity." These challenges were also mentioned in the accounts by faculty in the substantial change departments, but in the context of descriptions of actions taken to counter or address them; in the case of the no change departments they were only viewed as barriers to change. For example, one faculty member described an extended detour during a hiring process: a single faculty member argued that a grant funding program was biased in favor of women. The department devoted several meetings to discussing this issue, and obtained data from the funding agency demonstrating clearly that women were not in any way advantaged in this program. In the end a male candidate was hired. Whether or not this was the right hiring outcome, one person was able to tie up the candidate evaluation process by making a highly-charged but inaccurate claim.

Though women interviewees in these departments often expressed views very similar to those expressed by men, they differed from men in also pointing to problems in the departmental culture or climate that they felt could be changed. For example, one woman pointed to the self-defeating paralysis of the department in this area in contrast to other areas:

> One way to change it is if we actually be more active in getting more female students or graduate students into the field… I mean, it's no use complaining about it, do something about it.

Another said, "I think what affects the climate is a small handful of men…that can make the climate really uncomfortable for the few women." She noted that, given the visibility of these issues, recruiting women into the department is difficult.

Though the women interviewed from these departments sometimes could see paths to addressing barriers, overall they felt that the rest of the department viewed the problems as totally intractable, and that view prevented individuals from doing the kind of candid analysis of their

own role in their department's failures that could lead to a consensus that might mobilize efforts to make change. Overall, then, faculty from these departments valued other priorities over diversity, and viewed change as impossible.

3.10 Departments with Some Change

Interviewees from these departments mentioned two themes that characterized the substantial change group: *change-enabling features of the departmental and disciplinary context* (particularly some male faculty leaders, including some search committee members who "get it," some senior women in the department who are respected) and *proactivity in pursuing diversity* (e.g., using broader position definitions, taking care in composition of search committees). However, two themes characterizing the "substantial change" departments were noticeably absent: *open recognition of a serious problem coupled with shame about past circumstances and strong leadership on diversity from one or more department chairs.*

Although past negative departmental history was often mentioned by members of these departments, there was no sense that this history was pertinent in the present; instead it was viewed as having been completely overcome and therefore rendered irrelevant. For example, one faculty member described past incidents this way: "These had to do with two professors [who] had a certain—well, if you want to say it bluntly—predatory nature of making conquests" of students. He noted that "the incidents did have lots of repercussions and reprimands." He pointed out that "[It] is a wonderful place and an environment that's conducive to great stuff and all that. And those incidents were just marring and spoiling that image, damaging something that was really valuable." He noted that one of the bad actors has retired, and that nothing has recurred since "the turn of the [21st] century."

Interestingly, with one exception, faculty in these departments (including current and past chairs) tended to emphasize that the chair was *not* particularly important in creating or encouraging change. For example, one chair characterized himself as a "player coach," and noted that "the current milieu is they [the faculty] think of themselves as small businesses. And as small businesses, I think they're primarily interested in, you know, what furthers their own little activity" [rather than any value the chair espouses].

Faculty from the some change departments also emphasized two themes mentioned by those from departments with little or no change. First, they pointed to *external and internal factors* that make change difficult (such as the limited pool, negative climate, and difficult faculty). Second, although all of these departments had experienced some increase in the proportion of women faculty, they did not express determination to change more, and in fact tended to express doubt that further change was likely.

Many women faculty interviewed from these departments noted that progress was limited and the gains very fragile, despite the good intentions of some faculty. They also noted that some men disparage the accomplishments of women job candidates and no one counters their disparagements, that it has recently become more difficult to hire women, or that several male faculty are not permitted to take on women students because of their histories of overt sexual harassment. One woman said,

> It's slow. I mean, to be the only woman with kids [in a department] is, at this stage of life…at this stage in the history of human beings, it seems frustrating. I mean, that doesn't seem reasonable.

Another woman said,

> There is still—and I've seen it and experienced it myself, a, um…this—I believe it's unconscious, I don't think it's conscious—sort of discounting of a woman's voice.

She concluded, "I don't know how you get rid of it."

Overall, then, the interviewees from these departments expressed a mixture of sentiments, but their expressions of doubt and helplessness to make change counteracted any optimism. Their "bottom line" was most often that past successes were fragile, and further change—certainly more rapid change—was not very likely. Nevertheless, these departments had made some change—indeed, not statistically significantly less change than the highest change group.

4. DISCUSSION

Based on the analysis of themes that differentiated the accounts by faculty from the three groups of departments, we believe that it is possible to construct some understanding of enabling factors that were associated with making substantial and some demographic change, as well as constraining forces, or barriers that prevented change. In Fig. 2 we present a summary of the enabling and constraining forces we have identified. It is particularly important to note that the departments that made significant changes (per the inverse principle) managed to convert negative features of their past (a constraining force) into a motivating sense of responsibility to change (an enabling force). Equally, some of the same constraining forces (e.g., limited pools of women with PhDs in the field, vocal opponents of diversity) were viewed in some departments as problems to overcome, and in other departments as precluding progress. Thus, perhaps the most important feature of the departments that changed the most was their ability to transform constraining into enabling forces, while the most important feature of those that did not change was their view that the constraining forces could not be transformed. Whether the differences in the narratives merely reflect different assessments of the situation, or are partly post hoc explanations of the different outcomes, cannot be judged from the data we have; perhaps they are partially the result of both.

4.1   Enabling Factors that Promoted Substantial Change

Accounts from faculty in departments that experienced substantial change in the period under study differed from those of the no change group in terms of four themes, two of which were also absent from the accounts of faculty in departments that made some change. First, faculty members described not only a history of exclusion or unfair treatment of women (characteristic of many departments in all three groups), but also the department's collective embarrassment or shame about that history and the shared belief that strong measures were necessary to overcome it. In striking contrast, none of the faculty in the departments experiencing little or no change showed such concerns; instead they offered self-excusing explanations for the past. We suspect that consensus around a perspective emphasizing responsibility and a need for change is a very helpful enabling force in empowering leaders and department citizens to take necessary steps to make changes and hold themselves accountable for it.

In addition, consistent with the organizational change literature (see, e.g., Kotter, 1996; Lucas, 2000), many accounts stressed the importance of one or more department chair's leadership as a critical factor in making diversity a priority for the department and in making progress on it. This view applied equally to women and men chairs. Thus, we do not believe that women chairs
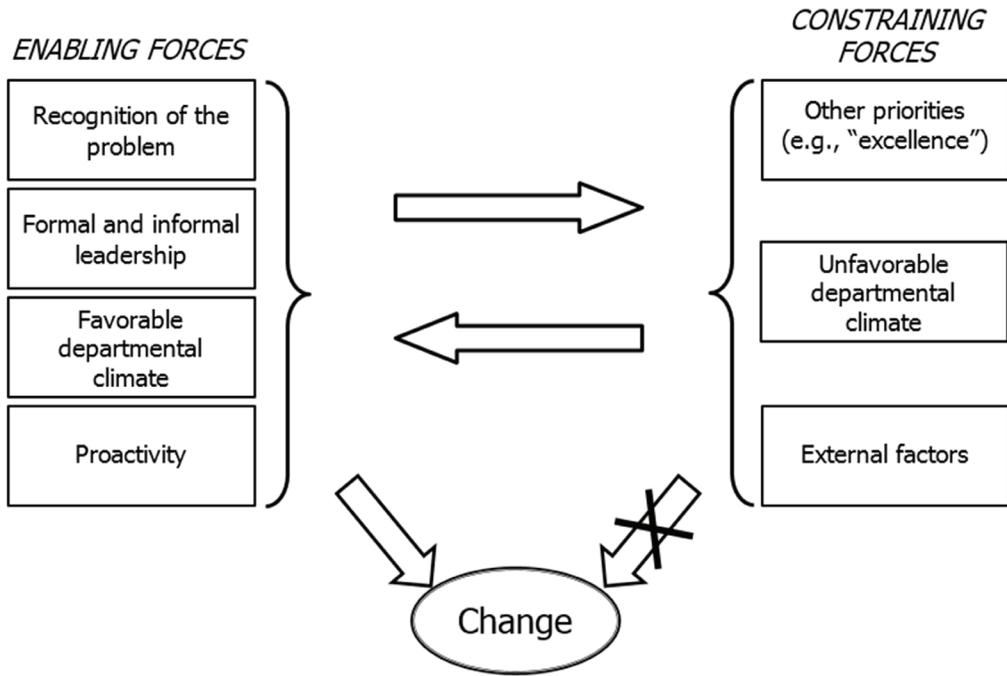
FIG. 2: Specific enabling and constraining forces identified as themes

are "the answer" to vigorous departmental leadership on this issue. (Indeed some women find it awkward or uncomfortable to lead on this issue.) Instead, we suspect that the key factor is having someone in the key leadership role—either a woman or a man— who both understands the issue and is willing to make it a priority, not only providing a vision of an alternative future but behaving in a way that confronts individuals and dynamics that stand in the way of change and proactively taking advantage of institutional resources that support change.

Importantly, faculty from these departments often identified features of the departmental or disciplinary environment they felt supported their efforts: increases in the pool of women candidates, increases in the number of men in the department who were committed to the issue or decreases in the number who were opposed to it (i.e., generational turnover), and the presence of senior women who could provide leadership on the issue and/or support the career development of junior women. Moreover, the development of a collective sense of responsibility and possibility in the "substantial change" departments is a striking difference from the other two groups.

Finally, faculty in departments that succeeded in making changes also pointed to proactive efforts of other departmental faculty and mentioned how much they valued university resources that helped them meet their goals, including resources offered through the Provost's office, the schools and colleges, and the institution's ADVANCE Program.

Not only did these departments name many enabling forces in their situation, but those forces allowed them to see ways to capitalize on cross-level synergies of enabling forces. From our data, it is impossible to know whether any particular factor in this list is critical, or whether there is a "necessary sequence" of events that makes change more likely. Clearly each factor supports an overall departmental narrative emphasizing that barriers like an undesirable and distasteful

past can be overcome by thoughtful efforts by the faculty and the chair. These efforts are grounded in realistic assessments of the obstacles to change, whether they involve individuals, departmental dynamics, processes that need greater transparency and fairness, or disciplinary realities. Although the faculty in these departments sound strikingly more optimistic about change now, we suspect that this optimism is both cause and consequence of their successful efforts in this period [see also Buckley and Grigsby (2011), p.147, on the role of optimism in change efforts].

4.2 Factors that Impeded Change

Faculty from departments that experienced little or no change, despite strong institutional commitment and resources to support it, described their departments in terms that emphasized the difficulty—even the undesirability—of change. These departments did not face greater objective hurdles, but they emphasized the obstacles as accounting for their lack of success. This emerges strikingly in the different factors they mentioned that "account" for their failure to make changes, ranging from small pools, to equivalent outcomes at peer institutions, to the difficulties of dual career issues, to the idiosyncratic nature of recruitment and retention failures, and to the inevitable slowness of change. If these factors truly controlled outcomes, they would have precluded the different rates of change in our three groups.

The other two themes that characterized the accounts of faculty in these departments—unfavorable features of the departmental context and the relative unimportance of diversity compared with other priorities—served to reinforce this picture of a combination of hopelessness and helplessness, which served as justification for inactivity.

4.3 What Did We Learn from the Middle Group?

The group of departments that made some change were a little like both of the other two groups. They tended to point both to self-excusing external factors as limiting their success in diversifying the faculty, and also to positive departmental features and proactive efforts. The overall impression created in their interviews was of well-intentioned people who would like to see change happen, had made some efforts toward it, but suspected it would not be successful (and therefore felt no accountability for it). This pessimism about the future was particularly evident in the women's accounts, but it pervaded all of them. Their accounts did not include two themes vividly present in the substantial change departments: *open recognition of the department's role in past failures* and *strong leadership on this issue from one or more department chairs*. We suspect the absence of these two factors points to their particular importance in mobilizing and supporting optimism about continued change.

4.4 Limitations of Our Study

This study relies on individuals' interpretations of the past they have experienced, and as such they are subject to all of the limitations of any retrospective accounts. We view the narratives we have collected as providing information about individuals' perspectives on that past, and on the future, but not as purely veridical accounts of what happened or what is now possible.

The factors we have identified were described mainly by very senior faculty, including department chairs. Since we needed to talk with people who had been present in the departments for at least 13 years, our sample does not include the perspective of very junior faculty, which might be quite different.

In addition, as noted earlier, we are all staff associated with the ADVANCE Program in the institution. As a result, some interviewees may have felt that they should recognize or acknowledge the role of our programs, or paint a more positive picture of change than is their real view. Although we recognize that this may have colored the interviews, such pressure should have been felt across all three groups. In fact, references to the value of ADVANCE's programs were much more frequent in interviews with faculty from the substantial change group than those from other groups. In addition, it is possible that our long-term investment in the issue of faculty diversity made it difficult for us to see some enabling or constraining forces clearly; we suspect that this may be offset by our collaborative relationship with the departments and our relatively thorough knowledge of the institutional context and the departments' histories and cultures.

Finally, we recognize that this is a study of departments within a single research-intensive institution that has a long-term, explicitly-articulated commitment to diversity, which limits the generalizability of the results. However, there was considerable within-institution variability, which is likely in most institutions. Some departments were relatively unaffected by that larger institutional commitment, focusing instead on other issues that mattered more to them. Moreover, because there was considerable diversity in the size and demographic makeup of the three groups of departments (and their fields) at both the outset and the end of the period under study, the differences in departmental discourses mattered more than these descriptive "facts." By outlining the findings in this study, we point to the value of having administrators provide support and encouragement to those skeptical of their capacity to make change by shining a light both on departments that make successful changes, and on the practices they employed to do so.

4.5   Implications of Our Findings

Our findings demonstrate the utility of our theoretical framework, drawing from Lewin (1951), Kegan and Lahey (2009), and Grenny et al. (2013). This framework pointed toward our focus on enabling and constraining factors in the study of departmental change, as well as on the inverse principle, suggesting the importance of considering how these factors may be transformed in the course of change efforts (Swanson and Creed, 2014). In addition, this study demonstrates the value of the constant comparison method as an approach to identifying themes differentiating departments that change a lot or not at all.

While we confirmed the importance of leadership emphasized in the literature on change in higher education (Kezar et al., 2006; Kotter, 1996; Lucas, 2000), we also confirmed the importance of approaches that build synergistically across levels of institutional change (Kezar and Lester, 2011). In addition, we identified some features of change motivation that have not been discussed in the empirical literature, perhaps most importantly the ability to transform painful realities (about past or present circumstances) into motivations and practices that support change. We have seen that department chairs and other opinion-leaders among the faculty can play a crucial role in this process. Some particularly powerful specific practices identified here include recognizing and taking responsibility both for past negative events, and for confronting toxic individuals and interpersonal dynamics. In addition, it is clear that institutional investment in resources to support recruitment, retention, and improvement of the climate clearly are worthwhile, especially if unit leaders (deans and department chairs) understand that their performance will be assessed in terms of successful employment of them. There are clear benefits for units that succeed in diversity efforts in an institution that has prioritized them: we have seen that faculty in departments that succeed in the change process both learn about how to make and sustain change

in their climates and in their practices, and develop confidence and optimism about their ability to do more of it.

Finally, we note that the most serious obstacles to change appear to be consensual views in a department that change is both impossible and not compatible with other core values. As Kegan and Lahey (2009) argued, it is critical to address the values that oppose the change process even as one embraces other values that support it. The departments that made little headway in the process of change appeared to be both satisfied with the status quo and convinced that diversity was impossible and/or incompatible with other core values such as excellence. Appointment of department chairs and senior faculty who are able to help departments reconcile multiple values and take advantage of institutional resources should make it possible for more departments to take advantage of institutional investments in change.

5. CONCLUSION

Overall the faculty from the departments that made substantial change in the hiring and retention of women over 13 years identified and created forces that enhanced and promoted change, while those that did not reported that constraining forces and competing values (which were also present in the departments that did change) precluded change. Perhaps the most striking finding in our analysis of themes is that the departments that made the most change openly acknowledged the department's distasteful, embarrassing, or even shameful history. Though we do not believe those departments actually had uglier histories than those in other groups, we do believe that by using the inverse principle they mobilized a sense of responsibility—shared by a substantial number of senior faculty—that maintained the energy and commitment to take action to make the future different. Faculty in these departments reported many proactive efforts to recruit and retain women faculty, use of university resources to support those efforts, and department chairs who led them in those efforts. In combination, these factors allowed faculty to develop expertise and optimism that led to success; that success allowed them to generate narratives that fed continued optimism about maintaining and increasing faculty diversity. In contrast, interviews with faculty from departments that experienced little change emphasized the impossibility of success and the importance of other priorities.

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