SPECTRUM

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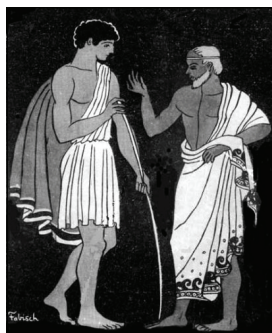*A report on underrepresented minorities in astronomy*

Beyond the Myth of the Perfect Mentor: Building a Network of Developmental Relationships[1] *by Linda Hill & Nancy Kamprath, Harvard Univ.*

The popular press has devoted a great deal of attention to mentoring as a key to career satisfaction and success. Individuals are advised on how to conduct a search for a mentor who will guide and support them over the course of their careers. Implicit in these accounts is the myth of the perfect mentor, a benevolent, more experienced individual willing and able to help a younger colleague navigate through the world of work. In Homer's *Odyssey*, the goddess Athena, in the guise of the nobleman Mentor, was trusted counselor to the young Telemachus. If only each of us had a goddess to accompany us on our journey through our work lives. There are critical competencies to be acquired, professional and personal challenges to be met, and difficult tradeoffs to be made in balancing personal and organizational ambitions. Although perfect mentors can be found in literature, they rarely exist in reality. The fact is that mentor-protégé relationships are difficult to establish and maintain; most people do not have mentors. And mentors are neither omnipresent nor omnipotent. Mentor-protégé relationships demand considerable investment and risk on the part of both partners.

Instead of embarking on a quest for the perfect mentor, individuals should

Telemachus and Mentor from Homer's Odyssey.

Pre-MAP: A Case Study in Evaluating Astronomy Diversity Efforts

by Daryl Haggard, Sarah Garner, & Nick Cowan, University of Washington

So you've created a stellar program to recruit and retain underrepresented[1] undergraduate students in your Astronomy department. Nice work! Now your university administration and/or funding agency would like to see proof that your efforts (and their $$) are having the desired impacts. You need a comprehensive evaluation plan, one that will inform you and your funding sources about which of your practices are translating to greater diversity and improved student learning, and which are not.

Faced with the need to explain our strategies to funding agencies and a desire to create a holistic approach to assessing and improving our undergraduate program, **The Pre-Major in Astronomy Program (Pre-MAP)**, our team of graduate students, faculty and staff have developed the evaluation program outlined

HIGHLIGHTS:

- *Find strategies for successful mentoring relationships. A must-read for all, whether mentor or mentee.*

- *Learn about recent analyses of Supreme Court rulings on affirmative action and their implications for university programs.*

- *Read about one astronomy program's efforts to evaluate its effectiveness in recruiting and retaining minorities.*

Beyond the Myth of the Perfect Mentor... (cont'd)

(Continued from page 1)

pursue a strategy of being the "perfect" protégé and building a network of developmental relationships. Developmental relationships are dynamic alliances between individuals which enhance both parties' organizational experience and career development. All work relationships should be understood as *potential* resources by which developmental needs can be addressed. In the following pages, we explore the process by which that potential can be turned into reality: (1) What functions can developmental relationships serve? (2) How are these relationships formed and maintained? (3) With whom in an organization can an individual establish such relationships? and (4) What are some of the special challenges those in the minority face in building these relationships? In summary, we offer guidelines for building a constellation of developmental relationships and an annotated bibliography for further reference. *Note: The accompanying annotated bibliography can be found online at the Spectrum website: www.vanderbilt.edu/csma/newsletter/spectrum.htm*

> *"Instead of embarking on a quest for the perfect mentor, individuals should pursue a strategy of being the perfect protégé..."*

Diagnosing Developmental Relationship Needs

Relationships do play a pivotal role in individual development at every career stage, by providing a broad range of developmental functions.[2] These functions can be classified into two interrelated yet distinct categories: career functions and psychosocial functions. Career functions are those that facilitate an individual's learning the ropes and preparation for advancement in an organization. Psychosocial functions involve the enhancement of an individual's sense of competence, identity, and effectiveness in a professional role. Any particular relationship may serve one or several of the functions listed below.[3]

The array of developmental functions that must be addressed challenges the notion of the "one mentor model." How could a single relationship satisfy all of these needs over the course of an individual's career?

Those relationships that provide both career and psychosocial functions are often labeled mentor-protégé relationships, while those that address only career functions are generally referred to as sponsor-protégé relationships. This distinction is useful to keep in mind when assessing developmental relationships, for it alerts us to the complexities involved in establishing and cultivating such relationships. Because mentor-protégé relationships demand some degree of identification or "chemistry" between the parties, they can not be forced. As Thomas (in press) observes, sponsor-protégé relationships require less sustained contact,

Developmental Functions

Career Functions	Psychosocial Functions

Sponsorship
    (opening doors)
	Role Modeling
	    (demonstrating appropriate behaviors, attitudes, & values)

Coaching
    (teaching and providing feedback)
	Counseling
	    (providing a forum for exploring personal and professional dilemmas)

Protection
    (providing support and/or acting as a buffer)
	Acceptance and Confirmation
	    (offering support and respect)

Exposure
    (creating opportunities for visibility)
	Friendship
	    (caring & sharing in ways beyond work requirements)

Challenge (providing "stretch" assignments)	

Pre-MAP: Evaluating Diversity Efforts... (cont'd)

(Continued from page 1)

here. Not all of the strategies that we employ will be relevant to the programs you need to evaluate, but many of our practices are broadly applicable and utilize existing resources instead of reinventing the wheel. We write this article in the spirit of a "case study", intended to share our efforts and generate further ideas, rather than a prescription that should (or could) be followed to the letter.

There are two complementary ways to think

about assessment and we touch on both in this article: in one case, objectives are formulated and verifiable milestones are laid out (e.g., research credit leads to published research, which in turn leads to graduate school acceptance); in the alternate scheme, assessment tools are grouped based on the time scale they evaluate (i.e. weeks vs. months or years).

Program Overview

The fraction of science Ph.D.s awarded to women, African American, Latino, and other minority students is currently far smaller than the fraction of the general population that these groups constitute[2]. The greatest obstacles for persistence in science reported by students are loss of interest, intimidation, poor advising, and lack of acceptance in their department[3]. Now in its third year, Pre-MAP is a research and mentoring program housed in the University of Washington's (UW's) Astronomy Department, whose primary goal is to recruit and increase retention of students traditionally underrepresented in science, math and technical majors. We target students who have not yet declared a major (typically freshmen, sophomores and recent transfer students) and integrate them into research and the department's broader academic culture with the belief that students so integrated are more likely to persist in the sciences.

Since Pre-MAP's inception in 2005, twenty-six students in three cohorts have participated in the program and thirty members of the UW Astronomy Department, a combination of faculty, post docs, and graduate students, have contributed time, research projects, and acted as research mentors. Over thirty research projects have been offered ranging from searching for new supernovae, probing for low-mass planets, constructing 3D galaxy models, and merging black holes using computer simulations[4].

Pre-MAP was initially funded through the UW President's Diversity Appraisal Implementation Fund and matching funds from the Department of Astronomy. It is partially supported for the next 4 years through the NSF CAREER grant of Eric Agol, the program's faculty leader. The program is critically dependent on the dozen graduate students and department's administrative assistant whose work on the program represents significant in-kind

The Supreme Court, Affirmative Action, and Higher Education

By Robert O'Neil, University of Virginia, reprinted from Academe Online by permission

The American higher education community found a curious mix of good and bad news in the U.S. Supreme Court's ruling last summer, in *Parents Involved v. Seattle School District* and *Meredith v. Jefferson County Board of Education*, about the use of race-based policies by public elementary and secondary schools. The good news: "Grutter lives!" Most observers agreed that the ruling reaffirmed the high court's 2003 *Grutter v. Bollinger* decision that had sustained race-sensitive admissions policies at the University of Michigan Law School. The bad news: it was far from clear just what legal principles "lived," because of sharp splits among the justices and pervasive ambiguities in the earlier ruling. More bad news emerged as the summer wore on. Observers realized that the Court's curb on the use of race-based desegregation remedies in public schools would almost certainly reduce the pools of well-prepared applicants from minority groups that have historically been underrepresented in higher education (mainly African American and Hispanic students). Fewer qualified minority applicants will mean that achieving and maintaining diversity on college and university campuses will be even more challenging. In the end, the most recent ruling left open a host of questions of great importance to faculty and academic administrators.

> *"In the end, the most recent ruling left open a host of questions of great importance to faculty and academic administrators."*

Good News

We should begin with the good news. While striking down most race-based remedies designed to achieve racial balance in the nation's public schools (specifically addressing plans used in Seattle and Louisville), the Supreme Court took pains to distinguish, and thus implicitly to preserve, its 2003 ruling in favor of the Michigan Law School's race-inclusive preferential admissions policy. Both the context and the process were readily distinguishable, explained Chief Justice John Roberts for a plurality of the justices. Higher education should be viewed very differently from elementary and secondary school education, he noted, recalling Justice

Sandra Day O'Connor's declaration in the Michigan case that "in light of 'the expansive freedoms of speech and thought associated with the university environment, universities occupy a special niche in our constitutional tradition.'" The *Grutter* opinion, noted the chief justice, had stressed "a specific type of broadbased diversity" and "the unique context of higher education"— special qualities either inapplicable to or disregarded by the Louisville and Seattle school boards in their desegregation plans.

Moreover, in the *Grutter* decision, the Court emphasized the "educational benefits" of diversity for the Michigan Law School, but no such emphasis emerged in the new ruling in relation to elementary and secondary schools. While the Michigan Law School admissions policy considered preferential factors other than race, involved no numerical quotas, and assessed applicants individually, the same could not be said of the public school plans that the Court has now rejected. Although the Louisville and Seattle dissenters argued that the *Grutter* decision should control the public school cases, at least in spirit, that claim met with little sympathy from the Roberts plurality (or from Justice Anthony Kennedy, whose slightly more sympathetic concurrence produced a majority). However, despite these qualifications and a less-than-sweeping validation of the 2003 ruling, there seems little doubt that "*Grutter* lives" for higher education, notwithstanding the probable demise of most race-based elementary and secondary desegregation plans. But that, unfortunately, is about the extent of the genuinely good news.

A Closer Look

It's easy to forget that *Grutter*'s companion case, brought by a rejected undergraduate applicant named Jennifer Gratz, reached a very different conclusion. In that decision, the justices invalidated (on both constitutional and statutory grounds) the University of Michigan's racially preferential under-

graduate admissions policy, which could not be seen as free of numerical targets or quotas, lacked individualized review of all files, and reflected diversity by race as the dominant, if not the exclusive, desideratum.

In fact, we need to recognize that the Supreme Court has never sustained the preferential use of race as an admissions criterion at the undergraduate level. Justice Lewis Powell's 1978 opinion in *Regents of the University of California v. Bakke*—universally cited for a bare majority view that race may be considered in the admissions process—validated by inference a Harvard University plan that was not before the Court but had been cited by amicus curiae briefs and secondary sources. Justice Powell used those materials to contrast the University of California, Davis, School of Medicine plan (which the *Bakke* majority invalidated for its mechanistic use of race) with a more flexible and benign use of ethnicity that marked the Harvard approach. But it is vital to recall that no undergraduate plan was before the Court; the only time the justices have ruled on such a plan, in the *Gratz* case, they found it constitutionally deficient.

A pessimist might even infer that undergraduate admissions plans can never comfortably invoke *Grutter*—not only because of the immense practical difficulty of proving that the requisite "individualized consideration" has occurred, but also because Justice O'Connor spoke so enthusiastically about the contribution of a racially diverse student body to preparing students for direct entry into the learned professions—law and medicine. Yet so narrow a reading of *Grutter* would be unwarranted. We can locate some prerequisites that both the *Grutter* Court and the current justices saw as necessary for an admissions policy to be constitutional: the inclusion and application of preferential admissions criteria other than race; year-to-year numerical variations that would show that no quota or fixed target was operating; individualized rather than group consideration of applicants' files; and some palpable link between racial diversity and the institution's mission. Any race-inclusive plan lacking such elements would be in serious trouble.

> *"Perhaps the most perplexing factor in the recent Court decision is the role of nonracial alternatives designed to achieve the same goal."*

Several other features of the Michigan Law School plan also clearly appealed to Justice O'Connor, but they may not be essential components of an acceptable admissions policy. She noted with approval, for example, the law faculty's own recognition that the inclusive use of race in admissions should be limited in time; she went on to suggest, quite specifically, that such plans should expire within a generation or a quarter century. The *Grutter* case also seems to have raised doubts about the notion that a "critical mass" of minority students is necessary to ensure the success of an institution or of the students themselves, even though that notion seems to have been approved as part of the Michigan Law School's declared mission. Because of a possible implication that "critical mass" is a code for "quota," a September 2007 policy paper issued by the American Council on Education (ACE) cautioned that "institutions should use the concept of 'critical mass' carefully and base it on the educational benefits [of] enrolling a diverse student body." Moreover, Justice O'Connor strongly implied that any such race-inclusive policy must reflect a faculty's "educational judgment," to which courts would appropriately defer. As a practical matter, it seems unlikely that any race-centered admissions policy would be established and thought capable of withstanding court challenge without such an underlying educational premise.

Perhaps the most perplexing of the factors that lead to our resounding "maybe" judgment of the recent Court decision is the role of nonracial alternatives designed to achieve the same goal. *Grutter* declared that institutions must give "serious, good-faith consideration [to] workable race-neutral alternatives that will achieve the diversity they seek." Yet in his 2007 concurrence, Justice Kennedy noted that broad-based race-conscious programs that invoke various nonracial desiderata might not "demand strict scrutiny to be found permissible"—a conclusion with which the four dissenters would undoubtedly concur.

Finally, there is more than a hint that race-inclusive policies must demonstrate results consistent with their goals; the ACE paper emphasized that, while this element "is not explicitly demanded… the implication of the Court's reasoning

Beyond the Myth of the Perfect Mentor... (cont'd)

(Continued from page 2)
lower levels of mutuality, and less status differentiation than do mentor-protégé relationships.[4] Not surprisingly, more people report having sponsor-protégé relationships than mentor-protégé ones.[5]

Establishing & Maintaining Developmental Relationships

Developmental relationships do not emerge full blown, but rather must be cultivated. Their establishment and maintenance requires a proactive orientation, considerable investment of time and energy, and often personal and career risk for both parties. In addition, they evolve and change over time. To illustrate the dynamic quality of developmental relationships, let us consider the typical evolution of a mentor-protégé relationship between a senior person and a junior colleague. As we will see, there is nothing magical about mentor-protégé relationships. They demand hard work on the part of both individuals, do not address all of the individuals' career and psychosocial needs, and often have a limited life-span.

Mentor-protégé relationships last on average from two to five years. They tend to progress through a series of predictable phases: initiation, cultivation, separation, and redefinition.[6]

Initiation and Cultivation

The first stage in any relationship is initiation. It generally lasts from six months to a year. This is the stage during which the senior and junior persons meet and interact, usually as a result of their positions in the organizational structure and their job responsibilities. In the process of interacting, the two discover a complementarity of develop-

mental needs. Generally, career functions emerge first. For instance, the senior provides the junior with coaching, helping him/her acquire appropriate attitudes and competencies. As the coaching pays off and the junior person begins to perform successfully, the mentor begins to create opportunities for the junior person to work on challenging and high-profile assignments. At the same time, the junior person may provide the senior counterpart with welcomed technical assistance, respect, and loyalty.

Once the foundation for the relationship has been laid, the cultivation stage begins. During this stage, the parameters of the relationship become clear and the range of functions served by the relationship expands to its maximum. The interactions of the mentor and protégé tend to increase and deepen, as both parties reap benefits from the relationship and hence continually reinvest the time and effort it takes to maintain it. The young person not only acquires important technical expertise and specialized knowledge about what it takes to be effective in his/her organization, but also receives support and confirmation of his/her professional identity. Analogously, the senior person's power (for instance, recognition for developing younger talent) increases by promoting a junior person who is making significant contributions to the organization. And the mentor is revitalized both personally and professionally by leaving a legacy in the next generation of leadership.

The cultivation stage is the time during which mutual trust, respect, and emotional interest grow between the senior and junior persons. Consequently, both tend to take more personal and career

Comparison of Two Types of Developmental Relationships

	Mentor-Protégé	Sponsor-Protégé
Functions Served	Career/Psychosocial	Career
Sustained Contact	High	Moderate
Identification	Strong/Task-based, and Personal	Moderate/Task-based
Intimacy (openness/ disclosure)	Moderate/High	As Appropriate
Interpersonal Bond (respect/trust)	High	Moderate/High
Status Differentiation	Moderate/High	Low/Moderate

risks on behalf of the relationship. They disclose more and begin to aid in resolving both professional and personal matters. For example, they not only regularly impart more "public" information about corporate matters that they might have, but also they share more "privileged" knowledge as well. As their mutual commitment increases, they both take advantage of opportunities to promote the other's reputation and career; not only do they "quietly" support the other, but also they make whatever "public" interventions that might be demanded. What started out as a series of temporary interactions has evolved into a longer-lasting, more involved relationship.

Separation and Redefinition

Alas, mentor-protégé relationships are not static. They often undergo major transformations over the course of time and can even come to an end. The catalysts for change arise from both changes in the individuals and in the organizational context. For instance, the senior person may no longer be able to help his/her junior colleague because of changes in position or power. As individuals go through various career stages, their particular needs and resources change. The junior person may no longer need or desire guidance and coaching. He/she may resent any "parent-like" behavior on the part of the mentor, and begin to clamor for the chance to work autonomously and "make a name for him/herself." Or the senior person may encounter a major career or mid-life crisis, which leads to reassessment of career as well as relationships. Moreover, almost inevitably, tensions and conflicts arise in any relationship. The junior person may make a costly mistake and thereby disappoint the mentor who has invested considerable time, energy, and political capital in the protégé. Or the senior person may fall out of favor in the organization and become a liability to the protégé. Finally, given the ubiquity of organizational restructuring and job mobility, the two parties may simply become separated, making it difficult for them to interact or have at their disposal the resources necessary to fulfill their partner's developmental needs.

The separation stage can be a very tumultuous

> *"Mentors are not 'guardian angels' who have dedicated their careers to the altruistic mission of nurturing protégés."*

time, since mentor-protégé relationships are often imbued with emotion. The relationship can deteriorate sharply, if one or both parties feels disillusioned or rejected by the other. (For instance, a mentor often expects some loyalty from a protégé even if the mentor can no longer provide critical resources. A protégé can not simply ignore such obligations.) It is never easy to be confronted by the boundaries of a relationship, to face up to the fact that the relationship may no longer be mutually beneficial.

Some period after the separation stage, the relationship may be rekindled, as hard feelings subside. Often it will be reestablished but in a different form, for instance, more like a peer friendship. Although the protégé may acknowledge gratitude for past assistance, he/she may now wish to establish more equal footing with the mentor.

Again, when one considers the reality of mentor-protégé relationships, the fallacy of the notion of the perfect mentor is revealed. Mentors are not "guardian angels" who have dedicated their careers to the altruistic mission of nurturing protégés. Mentor-protégé relationships, like all developmental relationships, are based on the principle of reciprocity. Both parties must benefit from the relationship for it to be sustainable. Individuals who are aware of their own needs and the needs of others can move beyond the "what's in it for me" mentality. They are more likely to be able to recognize and take advantage of opportunities to form developmental relationships. Those who ask for assistance and feedback are much more likely to receive career and psychosocial support from others, for in doing so, they demonstrate an eagerness and commitment to learn and are more likely to uncover potential areas of complementarity. For instance, Webber (1991) writes:

> *The ambitious subordinate who is too blatantly political in seeking the sponsorship of a senior star is likely to offend his or her peers, immediate superior, and even the intended mentor. Nonetheless, effective young professionals simply don't wait for lightning to strike or their good performance to attract sponsors. They seek out information about their boss's goals, problems, and pressures. They are more active*

Beyond the Myth of the Perfect Mentor… (cont'd)

> *in reaching out to senior others, at least to the extent of finding out what they do and investigating whose values and organizational dreams are compatible with theirs (p. 177).*

Also, those individuals who have realistic expectations about their developmental relationships are more likely to have supportive and effective ones. Most developmental relationships change and even end over time. Most are fraught with periods of dissension. Hence, it is unfair, as well as unwise, to place one's professional success in the hands of a single individual or relationship. Instead, a more effective strategy is to exploit opportunities over the course of a career to establish developmental relationships with a variety of individuals.

Once the groundwork is laid for the relationship, the individual must be prepared to commit the time and resources and take the risks necessary to maintain it. Without attention and caring, the relationship will falter and wither away, especially when difficulties are encountered. It is incumbent upon the individual to conduct periodic diagnoses of the relationship. Have the individual's goals, needs, and pressures changed? Have the other person's goals, needs, or pressures changed? If the answer to either question is affirmative, then the individual must work to reconfigure mutual expectations that fit both parties' current circumstances.

With Whom Should Developmental Relationships be Established?

The constellation of developmental relationships an individual has can take many forms (relationships can serve a few or many of the developmental functions described earlier) and include a wide range of people, including superiors, peers, and other associates within and outside the organization. What are the opportunities and dilemmas associated with each party?

The Immediate Superior

The immediate superior is often viewed as someone with whom one can or should establish a developmental relationship. In many respects, the boss is a natural candidate. Because of the opportunity for frequent interaction and the inherent interdependency between a superior and subordinate, there is a basis upon which to begin building a relationship. In short, there is usually a complementarity of needs between bosses and subordinates, some of which are presented below.[7]

In order to take advantage of this potentiality, the subordinate must take responsibility for establishing a productive relationship. To move the relationship in the right direction, the subordinate should among other things: (1) be sensitive to the perspective of the boss and work to build mutual expectations that fit both his/her personal and the boss' needs and style; (2) keep the boss informed; (3) behave dependably and honestly; and (4) use the boss' time and resources prudently.[8]

There are, however, some inherent dilemmas in boss-subordinate relationships that can undermine their capacity to foster development.[9] The conflict between the boss' role as *evaluator* and as *developer* is an age-old dilemma that will inevitably crop up. Consequently, both parties might be reluctant to take the necessary risks (for instance, disclosure) to build a more fully elaborated developmental relationship. Perhaps one of the most consistent and provocative find-

Interdependency Between a Boss and a Subordinate

<u>What Boss Has to Offer the Subordinate</u>

- Link to the rest of the organization
- Make sure the priorities are consistent with those of the organization
- Secure necessary resources
- Make sure are rewarded fairly

<u>What Subordinate Has to Offer the Boss</u>

- Know will deliver
- Know will deliver in ways that take into account the power dynamics in the company
- Rely on as a source of information from other parts of the organization, especially below
- Rely on as a sounding board

[7] This table is derived from the work of Cohen and Bradford (1989).

ings in Hill's (1992) research on new managers was that they did not perceive their current bosses to be resources for coping with the challenges of their first year. With few exceptions, most viewed the current boss as one who would threaten rather than expedite their development:

> *I know on one level that I should deal more with my branch manager, because that is what he is there for. He's got the experience and I probably owe it to him to go to him and tell him what is up. He would probably have some good advice. But it's not safe to share with him. He's an unknown quantity and he is the last place I'd go for help.*

It was difficult to ascertain why most of the new managers did not rely upon their current bosses as resources. On the one hand, considerable anecdotal evidence indicated that the cultures of the organizations studied embodied a "sink-or-swim" mentality. Moreover, there were clear norms against asking for help and limited tolerance for mistakes. On the other hand, in some sense the new managers were in "no position to ask for help," as one put it. Psychologically, many of them were not willing to admit that they needed assistance:

> *It's difficult to even go back to an old friend and express a lot of frustration. You're afraid, "Oops, I might let something out." As if you have secrets. It's like leaving home—the first six months at college. You don't want to talk to mom and dad. Even if they solicit you, "How's it going; do you need help?" You're not going to say yes and start pouring your heart out. You're a grown-up now, out on your own.*

Initially, a few of the new managers did approach their superiors for help. Those who did had bosses with reputations in their companies for being "people developers." This seemed to give the new managers the necessary confidence to view their bosses as developmental resources. Eventually, about half of the new managers turned to their bosses for assistance, and were generally relieved to find their superiors more tolerant of their questions and mistakes than anticipated. The new managers' conversations with their bosses were initially very task-oriented; they usually focused on a specific problem the new manager was grappling with.

These fledglings were reluctant to rely on their bosses for general advice or emotional support, however. Even at the end of the year, most of the new managers approached their bosses with some trepidation, all too aware of the risks associated with revealing "any weakness."

Admittedly, perhaps their immediate superiors should not have been the persons the new managers turned to first with their problems (especially more personal ones). Still, it seems unfortunate that the new managers were largely unable to utilize a prime resource and establish developmental relationships with their bosses. Their bosses, more than any other constituency with whom they interacted, held the richest appreciation of what the new managers were going through. Because their bosses had gone through the same experience of transitioning into management themselves, they were in a unique position to understand and help the new managers with their struggles. But for the boss-subordinate relationship to evolve into a supportive developmental one required both parties to take risks and treat each other as potential allies, not potential adversaries.

In evaluating particular job assignments and opportunities, individuals should take into account potential superiors' reputations for developing those who work for them. As mentioned, in her research, Hill (1992) found that some superiors were known as good "people developers." These superiors shared many characteristics: they had set high standards, been available, and consciously orchestrated developmental experiences. They were oriented toward the long-term career development of their subordinates and provided what Hall (1976) refers to as supportive autonomy.[10] They were delegators who allowed their subordinates to participate in important decisions and, when appropriate, make decisions alone. In addition, they held their subordinates accountable for their decisions and actions, giving them timely and candid feedback about their performance. One new manager described this as being given:

> *Just enough rope to hang myself, well not quite enough… He let me feel in control. He built up my status—I felt like I owned my own 10 million dollar business. And he talked to me not just about what I did, but how I did it when I'd come back from a call… He gave me loads of feedback*

> *"Some superiors are good 'people developers.' They set high standards, are available, and consciously orchestrate developmental experiences."*

Pre-MAP: Evaluating Diversity Efforts… (cont'd)

support from the department. *Ultimately, Pre-MAP is working towards permanent institutional funding from within the UW.*

Mapping Program Objectives to Evaluation Strategies

The first – and arguably most important – step in evaluating a program is to carefully articulate its objectives. In the case of Pre-MAP, the long-term vision is for astronomy (and other STEM disciplines) to be more diverse. We tackle this ambitious goal at the institutional level by providing professional development to graduate students, post docs, faculty and staff, and by helping to improve the department's culture regarding diversity and undergraduate research. However, the principal focus of Pre-MAP is undergraduate student development and success. We target the students during the critical years between arriving at the University with an interest in the sciences and actually declaring a major in a STEM discipline.

We recruit underrepresented students by actively building relationships with high school and after-school programs (e.g. Math, Engineering, Science Achievement, a.k.a. MESA, a pre-college program currently operating in 8 states, see washingtonmesa.org); by sending targeted emails to incoming UW students based on their self-declared academic interests, ethnicity, gender, etc.; and by working closely with academic advisors at the UW's Office of Minority Affairs and Diversity (OMA/D). In the end, almost all Pre-MAP students have been recruited through phone conversations with Pre-MAP staff. We track our recruitment outcomes using a dedicated Pre-MAP database. These data can be compared to UW student databases and statistical resources from the astronomy community, including the American Institute of Physics (AIP), in order to benchmark our effectiveness.

Participating students enroll in the Pre-MAP seminar during autumn quarter, where they learn astronomical research techniques that they then apply to research projects conducted in small groups[5]. Additionally, students enroll in an introductory astronomy survey course and one or two other courses of their choosing. Pre-MAP students receive one-on-one mentoring and peer support for the duration of the academic year and beyond, and are invited to attend astronomy department events and Pre-MAP field trips to astronomical facilities. Successful Pre-MAP students have declared astronomy and physics majors, extended their research projects beyond the fall quarter (e.g. by taking research credit), presented posters at the UW Undergraduate Research Symposium, and received research fellowships and summer internships.

As a part of the Pre-MAP seminar students participate in review sessions for exams in the accompanying astronomy survey course and post-facto reviews of their performance to help eliminate misconceptions and/or strengthen their astronomy foundations. We encourage students to form study groups to work on their homework and to study for exams. This peer support is enormously helpful for students in the sciences, and learning to foster these supports early in their academic career helps ensure our students' persistence and success in a STEM major. We also organize a workshop as a part of the seminar to introduce students to other campus resources and to familiarize them with career paths in astronomy. Grade point average, time to degree, course rigor, persistence in research, scholarships/awards, and utilization of campus resources are all tracked by our staff via the Pre-MAP database and annual interviews.

In the short-term we encourage students to continue their research project begun during the Pre-

MAP seminar. As time progresses, we anticipate that faculty will see an increase in the employability of Pre-MAP students for research projects. Since they begin active research early on, Pre-MAP students are more likely to present and/or publish their research than most undergraduates. We evaluate research performance and persistence through the Pre-MAP database, annual interviews, and annual faculty surveys.
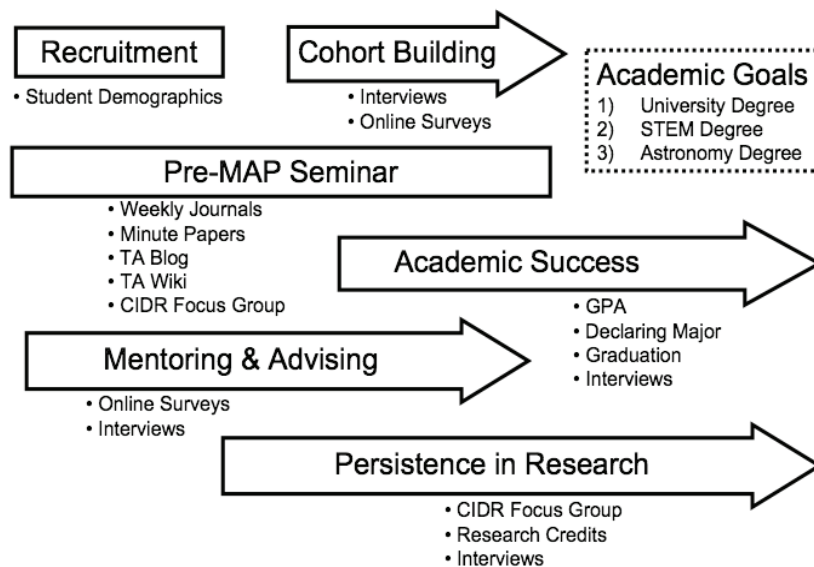
Another program success indicator is the graduation rate of Pre-MAP students with a degree in astronomy or another STEM degree. To advance this objective, we encourage students to register for classes that prepare them for a science degree and to actively begin formulating their personal, college, and career goals with the help of advisers and research mentors. We will continue to track their progress as our students move on to graduate school and/or professional employment. This will all be evaluated through the Pre-MAP database, annual interviews and post-graduation interviews.

Cohort building and community events are a large part of the Pre-MAP experience. Early on we hope to see an increase in our students' confidence in their ability to succeed. Their perception of the University (e.g. as overwhelming, foreign, intimidating) should change, as students become comfortable approaching faculty with questions or for research and as they learn how to navigate a large institution (a particular challenge to first-generation college students who do not have prior family knowledge of academic expectations). Ultimately students should leave the UW having a positive experience and attribute it to the role Pre-MAP played in their education. These objectives will be measured through annual interviews and help from a focus group led by the UW's Center for Instructional Development and Research (CIDR)[6].

Assessment Tools & Results

We evaluate Pre-MAP on a variety of timescales, ranging from years (Longitudinal Evaluation), to 10-week quarters (Formative Evaluation), and

Pre-MAP Components & Evaluation

down to individual weeks (Real-Time Corrections). The longitudinal review is achieved through annual interviews, and by monitoring the database of student records (declared major, GPA, etc.). The formative review occurs at the end of the autumn quarter and consists of questionnaires as well as a focus group led by CIDR. The real-time corrections are based on in-class feedback, the students' weekly writing assignments, and the seminar instructor's weekly blog. Below we describe the evaluative techniques used to assess Pre-MAP's success and summarize our early results.

Longitudinal Evaluation

A comprehensive database is the most useful way to track the majority of information required for the evaluation of Pre-MAP. Basic information such as student names, gender, and ethnicity can be stored alongside details like declared major (e.g. see the Pre-MAP Majors chart), GPA, time to degree. Using such data, we can compare Pre-MAP's demographics to those of the UW's astronomy department majors, the UW's astronomy degrees granted, and national degrees granted in astronomy, as reported by participating institutions to the AIP (e.g., Pre-MAP Recruitment demographics[7]).

We also track the activities that Pre-MAP students participate in their research projects, research advisers, awards, graduate school acceptance and attendance, and future employers. In the longer

Beyond the Myth of the Perfect Mentor… (cont'd)

about how other people saw me. Sometimes I'd get mad—I didn't always want to hear what he had to say. But now I can use that information to know how to handle myself.

The bosses who had been good teachers had also granted their subordinates the "right to make a mistake." By doing so, they had helped them learn how to manage risk, both intellectually (weighing options and tradeoffs) and emotionally (coping with attendant personal stresses). In short, through their actions, the past bosses had led their subordinates to broaden their perspective about the business. In addition, through role modeling they had demonstrated the value of, and appropriate method for, managing others' career development. And finally, they encouraged self-motivation and a "learning attitude" in their subordinates: "He was always stretching me, to stretch just as far as I could without breaking. With him you always wanted to do more and learn more."

Other Superiors

Individuals can also establish relationships with superiors to whom they do not report directly. Those who do not allow their narrow job task to over-determine with whom they interact can take advantage of a number of opportunities (for instance, seniors they encounter while working on a task force or attending a training program) to establish relationships with superiors in their organizations. Other superiors, much like an immediate superior, are in a position to play a liaison role for the junior person. They can represent the person's interests upward and have the expertise and resources necessary to lend career and/or psychosocial support. And the role conflict between evaluator and developer is reduced, albeit not eliminated. In this vein, Hill (1992) found that new managers relied heavily upon *previous* superiors for support and guidance in their new positions. These superiors were people with whom the new managers "had a history." And looking back, the new managers realized that they were people who had behaved in "mentor-like" ways toward them. Hence, they had grown to trust them for both professional and personal support.

> *"Individuals tend to think of developmental relationships as traversing hierarchical lines. Such a perspective is extremely limiting…"*

More and more corporations, mainly professional service firms, are experimenting with so-called mentoring programs in which senior and junior people are matched. In some programs, the senior person is instructed to assist a particular junior colleague with his or her career development. In other programs, the junior person is encouraged to select a senior person who can provide performance feedback and support—someone who is not a direct superior and with whom the subordinate feels comfortable. Such programs have met with mixed success. They seem to work much better in theory than in practice. Reasons commonly cited for their failure include: the senior members are poor at providing feedback and coaching and are given little incentive to spend time on these activities; and the junior members do not "trust" their mentors and are unwilling to admit their shortcomings and concerns. Further, both parties may have unrealistic expectations of what can be accomplished. As discussed, developmental relationships cannot be legislated and can be difficult to establish and maintain.

Peers and Other Associates

Individuals tend to think of developmental relationships as traversing hierarchical lines. Such a perspective is, however, extremely limiting, for relationships with peers can also be developmental. Peers usually do not have the power of superiors, and therefore cannot play the liaison role as effectively or have as much access to critical resources as do superiors. Moreover, peers often find themselves in competition for such things as promotions and resources. However, there are a number of advantages to developing relationships with peers. As Kram and Isabella (1985) note, peer developmental relationships are, of course, more likely to be available. In most organizations, individuals have more peers than superiors. Moreover, the lack of a hierarchical dimension in the relationship might make it easier to achieve mutual support and collaboration:

> *The current study suggests that peer relationships may offer unique opportunities that should not be overlooked or underestimated. They provide a forum for mutual exchange in which an individual can achieve a sense of ex-*

(Continued from page 12)

> *pertise, equality, and empathy that is frequently absent from [relationships with senior people]. In addition, peer relationships appear to have a longevity that exceed those [with senior people]. Several peer relationships we studied had lasted almost 30 years. Thus, these relationships can provide continuity over the course of a career, seeing individuals through change and transition, as well as through the day-to-day tasks of work life.*

Indeed, Hill (1992) found that the majority of managers in her study believed that access to a network of peers was a key ingredient in having a successful experience. After the new managers overcame some of the inhibitory effects of competitive pressures with peers, peer interactions provided a supportive forum in which they could explore how they thought and felt about the challenges they faced:

> *At first I didn't know how to utilize different people I'd met. I'd call and talk pleasure when I should've been talking business and then waited to see if they'd give me an "in" to ask a question or two. As I saw what an opportunity for learning it was to talk to as wide a range of people as I could, I got better at calling [peers] around the country and getting to the point. I'd admit I was just looking for new ideas. "Here is a situation. What would you do in this situation?"*

Another new manager referred to the fact that his peer network represented his "suicide hotline." These were relationships in which he could release pent-up frustration and tension, and therefore free himself to focus on the substantive issues at hand. As these quotes should reveal, relationships with peers were often very informal and supportive ones. The new managers felt free simply to explore ideas and disclose their "real concerns." Many of the new managers had peers they "chatted with" on a weekly or more frequent basis.

Not surprisingly, peer, not superior, relationships came to be the most important developmental relationships for the new managers. They relied on peers as confidants and sounding boards for their ideas, for candid and timely feedback, and for emotional support in handling the different challenges that arose. Associates outside the organization (e.g., from community service work or classmates from college or graduate school) also proved to be valuable resources for the new managers. Such relationships tended to resemble in tone and function (although the career advice and support were less tailored to corporate context) those the new managers experienced with peers inside the organization.

In summary, those individuals with a variety of developmental relationships (with superiors, peers, other associates)[11] seem have a distinct advantage, for different relationships serve different functions.

Contextual Factors

Developmental relationships are profoundly shaped by situational factors. Organizations differ in terms of the extent to which they inhibit or facilitate the establishment of developmental relationships. Below is a list of relevant organizational factors:[12]

Relevant Organizational Factors

Hierarchical Structure and Culture
The more hierarchical an organization, the more unequal the power distribution in superior-subordinate relationships & the more competition in peer relationships. These pressures impede frequent open interaction & communication, and hence the formation of developmental relationships

Task Design
Tasks that include working with others (for example, on cross-functional teams) as opposed to those that involve solitary work are more likely to provide opportunities for the development of meaningful alliances. Individuals who work on tasks that are challenging and critical to the organizational mission will be more attractive to others as persons with whom to work and form relationships.

Performance Appraisal and Reward System
Employee expectations and behavior are affected by the performance appraisal and reward system of an organization. Performance appraisal systems that place some emphasis on development as well as evaluation are more likely to provide forums for constructive coaching and counseling. If individuals are severely punished for taking risks or making mistakes, they are less likely to do so and hence to steer away from developmental experiences and relationships. If individuals are not rewarded for collaboration and the development of others, they are less likely to devote much time and attention to such efforts.

Cultural Context
There is growing evidence that expectations and behavior in work relationships differ across cultures (for instance, norms about superior-subordinate relationships, conflict management, and public/private life integration).[13] Hence, the establishment of developmental relationships might vary across cultures. It is important to understand what the relevant differences might be and actively to build common ground and a comfortable way of working with those from a different cultural background.[14]

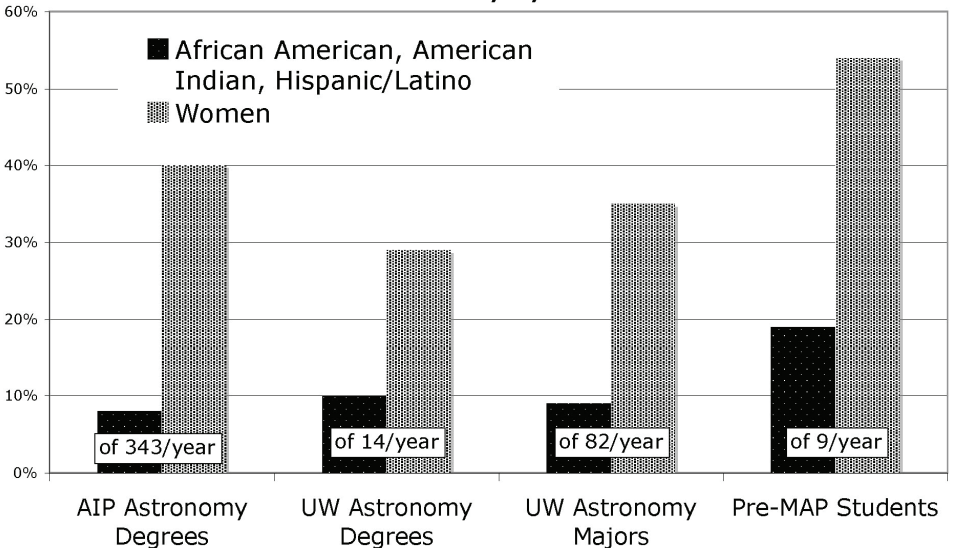# Pre-MAP: Evaluating Diversity Efforts... (cont'd)

(Continued from page 11)
term, a comprehensive data-base will, allow for comparative studies between students that participated in activities and those that did not, providing evidence for the effectiveness of each activity.

In addition to the database, we conduct annual interviews[8] every autumn quarter in order to collect consistent data from all Pre-MAP students during their years at the UW. These one-on-one interviews are conducted by Pre-MAP staff who have little previous interaction with students and are not in a position to grade or otherwise formally impact individual student records. In the future, if adequate funding becomes available, these interviews

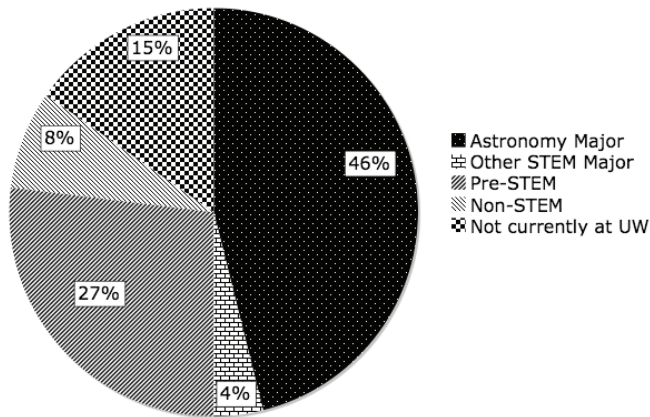**Pre-MAP Recruitment Cohorts 1, 2, & 3**

PRE-MAP TARGET AUDIENCE – Histogram showing the fraction of underrepresented students in astronomy nationally and at the University of Washington, based on self-reported statistics. The American Institute of Physics statistics report the number of degrees granted in 2005. The data for the UW Astronomy majors and degrees is based on data for Cohorts 1-3 (years 2004-2007), while the data for Pre-MAP is based on 2005-2008. Note that minority women are counted in both groups. The target audience of Pre-MAP includes not only the groups listed above, but also other underrepresented students such as Pacific Islanders, first generation college students, students from low-income households, and students with disabilities.

will be passed to an external evaluator, e.g. the Center for Workforce Development (CWD)[9]. The interviews not only provide more qualitative data, but also allow for follow up questions or explanation of questions to interviewees.

The first of these interviews was conducted in autumn 2007. We contacted members of cohorts 1 and 2, and asked them for a personal interview with one of the Pre-MAP staff. We conducted short (~1/2 hour) personal interviews with 10 of 18 alumni. During the interviews we queried students, now in their second or third year at the UW, on subjects including community building, mentoring, skills, and classes/careers.

All of the students interviewed felt Pre-MAP had a community and roughly half felt those communities were cohort-specific. These students also stressed that continued contact with the Pre-MAP instructor helps them feel included in department. When asked about the community in the astronomy department, 100% said yes there is a community, but 70% considered themselves to be a 'lesser' members or not members at all. Some students de-

fined community membership as declaring the major. ~80% of students felt comfortable approaching faculty/grad students, but noted that they would definitely talk with them more if they had been introduced before (even if it was a brief meeting). From these results, we identified two actionable items: (1) the Pre-MAP staff should facilitate more multi-cohort community building activities, (2) a "mentor ladder" involving members of the department from every stage in their academic career would be beneficial to Pre-MAP students. The latter point has also been reflected in comments from the larger undergraduate astronomy student population.

Of the students interviewed, 70% are currently doing research. On the other hand, two-thirds of those no longer doing research say they felt they did not contribute to their research project while in Pre-MAP. A possible means of improving the mentoring relationship between Pre-MAP students and their research advisors might be to invite a veteran research mentor to give a talk to potential mentors about how to work with undergraduates. Such a

**Pre-MAP Majors: Cohorts 1,2 & 3
(26 students)**

Legend:
- Astronomy Major — 46%
- Other STEM Major — 15%
- Pre-STEM — 8%
- Non-STEM — 27%
- Not currently at UW — 4%

PRE-MAP MAJORS – Pie chart showing the majors chosen by the first three cohorts of Pre-MAP, comprising 26 students. Not all of the participating students have declared a major yet, since they are only required to do so by the end of their sophomore year. Of the four students not currently enrolled at the University of Washington, two are expected to return for the 08-09 academic year. (STEM = Science, Technology, Engineering, and Mathematics.)

(Continued from page 14)

presenter could address some specific mentoring tools like showing undergraduates that they are in fact contributing to the research project, even while they are building the skills to become an ever-more productive member of the research group.

Students mentioned utilizing a number of other resources aside from their Pre-MAP instructor or research mentor, including astronomy and physics academic advisors, astronomy lecturers and faculty, astronomy graduate students, upper level astronomy undergraduate students, and the OMA/D advisors.

Pre-MAP students evaluated their research skills and computer knowledge slightly above other non-Pre-MAP science students. Self-confidence was increased as a result of Pre-MAP for some students. As a part of this line of questioning students mentioned: "not feeling silly asking questions, which helps when meeting with a mentor" and "presenting research and learning to work with research mentors". Students were also asked to rank themselves in several areas compared to the other science or engineering students they know; their responses are summarized in the Student Self-Evaluation table (on p. 19).

Nearly all of the students interviewed said they see themselves working in a science field in the future. However, most of them expressed a lack of

career knowledge or understanding of the path to a science career; at the moment their focus is on completing their undergraduate degree and they are unsure of what happens after that. Though this is fairly typical of their age and stage in college, it again supports developing a mentoring structure that introduces them to astronomers at all career stages.

These results also identify a need for first quarter academic planning/scheduling. 40% of interviewees indicated they would have liked to start physics earlier and 30% said they would like to have started math sooner. Note that 90% of the students interviewed had taken a physics or an AP physics course before entering the UW and 50% of those interviewed had received credit for college-level calculus, or higher from AP credit (no student that had AP credit said they would have preferred to start math sooner). As is evidenced from our first year of results described above, annual interviews yield numerous useful assessments of the program. After graduation, similar surveys will be sent out on a biannual basis for the first 4 years after a student leaves the UW. Following this time, a survey will be sent out only every 5 years. These surveys will cover longitudinal questions such as current employment, research, and possible contributions to science. We are also in the process of developing a complementary faculty survey, which will be administered for the first time this spring.

Formative Evaluation

There are a number of formative evaluation measures in place for the Pre-MAP seminar, which serve to improve the course from one year to the next. On the last day of class students fill out UW Office of Educational Assessment (OEA) student evaluation and comment forms; these are administered to all courses at the UW. OEA assessments provide individual, anonymous feedback on which parts of the class need improvement, course structure, and instructor teaching abilities. As these surveys are filled out each year, they give uniform assessments from all three cohorts. Over three years, the seminar has an average median score of 4.2 (out of 5, where 5=Excellent, 0=Very Poor) based on 26 student responses for the four main evaluation questions, which involve rating (1) the course as a whole, (2) course content, (3) the instructor's con-

Beyond the Myth of the Perfect Mentor... (cont'd)

The Effect of Minority Status on Developmental Relationships

Both anecdotal accounts and research suggest that women and minorities encounter unique dilemmas in establishing developmental relationships.[15] In this vein, the cynical side of developmental relationships, the "old boy network" and notion of "it's not what you do, but who you know" have been proposed as crucial explanations for the inability of those who are "different" to succeed and flourish in organizations. As we have seen, developmental relationships involve a mix of instrumentality and emotionality. Hence, some degree of identification, affinity, and trust is crucial to their establishment. Consequently, it is not surprising that developmental relationships do in fact occur more naturally between "like" individuals. Those who are in minority status (for instance, in most organizations in the U.S., women, ethnic, racial, and religious minorities) in an organization are going to find fewer individuals like themselves with whom to establish supportive relationships. And it is the case that there are inherent limitations in developmental relationships that cross gender, race, and ethnicity. Thomas and Alderfer (1989) argue that, in light of the features (outlined earlier) of sponsor as opposed to mentor relationships, members of minority groups might find it easier and more realistic to seek out the former rather than the latter. Analogously, they point out that people in the minority cannot afford to ignore peer developmental relationships, since minority superiors may be a rare (or over-utilized) commodity.

The burden that accompanies the high visibility characteristic of being a token (this is a sociological term for being in the minority; however, it is no accident that the term normally takes on pejorative connotations) creates special challenges for minority persons.[16] First, others correctly recognize that establishing a developmental relationship with a minority person is inherently riskier, since the minority person's performance will be scrutinized more closely. Therefore, women and minorities

> *"Minorities in an organization are going to find fewer individuals like themselves with whom to establish supportive relationships."*

confront higher hurdles for proving themselves to potential mentors or sponsors than do their majority counterparts. Second, tokens tend to be stereotyped as representing the entire minority group. Hence, it is difficult for others to perceive and treat them as individuals. For instance, those from the majority group may preemptively decide that an individual in the minority group is "too different" to have anything in common with them. Their anticipation of the complexities of managing a relationship with someone different from themselves may lead them to shy away from such encounters.[17] They do not readily recognize that the minority person is a resource with whom they can establish a mutually beneficial relationship. Those in the same minority group tend to rely heavily upon stereotypes as well. For example, Ely (1990) describes some of the difficulties faced by women in firms where few senior managers are women. Her research suggests that the junior women, rather than building ties "naturally" based on a level of shared identity appropriate to the strength of the relationship, tend to over-identify or, paradoxically, over-differentiate themselves from the few senior women.[18] Initially, the junior women assume the senior women are natural allies and therefore engage in inappropriate levels of intimacy. When they are confronted with the fact that the senior women are indeed different from them (for instance, they do not take the junior women's side on a particular issue), they may feel personally betrayed and retreat to an equally inappropriate level of differentiation.

Consistent with the work of Ely, Kram (1988) outlined five generic problems in cross-gender ties, the last two relating to public perceptions of the relationship:

1. **Men and women are inclined to assume stereotypical roles in relating to each other**. In order to reduce the ambiguity inherent in new work relationships, cross-gender alliances tend to reproduce relationships based on stereotypical gender relationships (father-daughter, chivalrous knight-helpless damsel). Both participants in the relationship may collude in re-

producing roles that reduce the effectiveness of the relationship and devalue the intellectual contribution of the woman.

2. **The role modeling function tends to be unsatisfactory to both the mentor and the protégé**. Female protégés may not find typically male solutions to matters of managerial style or development effective as they often face a different set of problems and concerns in their early careers. On the other hand, men may find it difficult to empathize and identify with the struggles of young women managers.

3. **The mutual liking and admiration characteristic of all developmental relationships may lead to increased intimacy and sexual tension**. Growing intimacy can be both a threatening and an exciting aspect in cross-gender relationships, leading to a testing of the boundaries in the relationship. This testing of boundaries is difficult and can be a source of substantial misunderstandings and tension.

4. **Cross-gender relationships are subject to intense public scrutiny and suspicion**. Given the possibility of romantic liaisons, cross gender relationships are given heightened scrutiny by other members of the organization. The possibility that sexual involvement and favoritism rather than competence are the basis for the relationship can reduce the effectiveness of both individuals.

5. **Cross-gender relationships may cause resentment among male peers**. The competition between male peers may make a solo woman's developmental relationship with a male the subject of scorn and ridicule. This relationship may isolate the woman from her peers.

Thomas and Alderfer (1982) looked at the particular problems African-Americans face in establishing effective work relationships. They found that African-American professionals and managers spend more time than their majority counterparts working through issues concerning their professional identity and feelings of alienation and inclusion. It is easier for them to work through these concerns (psychosocial needs) in developmental relationships with those whom they can personally identify. Although members of the majority group (white males) have come into contact with women (albeit not necessarily in a professional context), many may not have interacted with African-Americans and may find it difficult to empathize with minority individuals. Because whites and African-Americans often lead separate lives away from the job, they don't mingle socially and get to "know each other as people." Other minorities may be in a better position than majority members to help minority individuals sort out the pressures of biculturalism; that is, conducting their personal lives according to one set of cultural expectations and their professional lives according to another.

Although the picture painted above is bleak and unfair, it is not an insurmountable task for persons in the minority to establish developmental relationships. However, they can afford to be neither naive nor cynical about their circumstances. Instead, individuals in the minority, like their majority counterparts, must take the initiative and work to establish a network of developmental relationships, one that ideally includes members of their minority group as well as members of the majority group in the company. It goes without saying that majority members have an obligation to confront their attitudes and behaviors which may place minority members at a disadvantage. Furthermore, minority members must be prepared to discuss and explore issues that arise because of their minority status with those whom they wish to build developmental relationships. Although superficial conformity on some issues can be effective, over-conformity on key ones is detrimental in the long run. Thomas (in press) found that those relationships in which the difference (in this instance, racial) was "embraced" and sensitive issues discussed were more successful than those in which tough topics were ignored.

> *"Members of the majority group may have not interacted with African-Americans and may find it difficult to empathize."*

Guidelines for Building a Network of Developmental Relationships

Now that we have explored the reality and complexities of developmental relationships, it is appropriate to offer some guidelines on being the "perfect" protégé and building a network of developmental relationships.

Beyond the Myth of the Perfect Mentor... (cont'd)

1. **Do not look for one mentor-protégé relationship to carry you through the course of your career.** Instead of embarking on the search for the perfect mentor, view all work relationships as potential resources from which you can meet your developmental needs.

2. **Recognize opportunities to establish developmental relationships and reach out to prospective partners.** Analyze your developmental needs and proactively work to create a constellation of supportive relationships with superiors, peers, and other associates. Take advantage of opportunities (both formal and informal) to establish alliances with others. Express interest in others' goals and activities and be willing to ask for and offer assistance to others.

3. **Be realistic about developmental relationships.** Keep in mind that developmental relationships must be mutually beneficial to both parties. For the relationship to begin, there must be some basis of compatibility or complementarity. Developmental relationships do not emerge full blown; rather, it takes time and effort and often risk to cultivate them and weather the inevitable disagreements or stresses that may arise.

4. **Accept, do not deny, that developmental relationships are dynamic.** Be prepared for your developmental relationships to evolve over time. It is important to reevaluate periodically their appropriateness as individual and organizational circumstances change. Relationships which at one time were healthy can become dysfunctional and even destructive.

5. **When evaluating career choices, take into account the extent to which opportunities are available for forming developmental relationships.** Seek out those positions and organizations that provide a supportive context for establishing developmental relationships. For women and minorities, it is important to be aware of the number of individuals like you in the organization, for that number will have an impact on the availability and character of developmental relationships.

6. **Recognize and be prepared to address the complexities involved in developmental relationships with those in the minority**. Both those in the minority and those in the majority should be sensitive to and adopt a proactive, problem-solving orientation toward the special challenges involved in such relationships. To do otherwise is to deny inappropriately critical opportunities (for both parties) for professional growth and success.

It may be difficult at first to give up the dream of the perfect mentor. But in fact, to do so opens up a whole world of fruitful possibilities. Those individuals who explore those frontiers achieve more career success and satisfaction.

Endnotes

1. The ideas in this note have been heavily influenced by the work of Kathy Kram and David Thomas (see bibliography).
2. For instance, in a review of the relevant literature, Webber (1991) concluded that anywhere from 30% to 75% of managers feel they have benefited from mentor-like relationships.
3. This table is compiled from the work of Kram (1988).
4. David A. Thomas, "The Impact of Race on Managers' Experiences of Gaining Mentoring and Sponsorship: An Intra-Organizational Study," to be published in the *Journal of Organizational Behavior*.
5. See, for example, the work of Hill (1992).
6. Kram (1988) identified these stages in a major research project of mentoring.
8. See annotated bibliography in online edition for relevant references.
9. Nielsen and Gypen (1979) reviewed eight such dilemmas: Alliance versus Competition; Clarifying Expectations versus Second Guessing; Initiative versus Dependence; Competence versus Inferiority; Differentiation versus Identification; Relating Personally versus Relating Impersonally; Mutual Concern versus Self-Interest; Integrity versus Denial.
10. Douglas T. Hall, *Careers in Organizations* (Santa Monica, Calif.: Goodyear, 1976).
11. Theoretically, individuals could establish developmental relationships with subordinates, especially more experienced ones. Indeed, such relationships do occur, but the conflict between evaluation and development can make them problematic.
12. See, for example, Kram (1988), Thomas and Kram (1988) and Hill (1992).
13. See annotated bibliography for general references on cross-cultural differences in work expectations and behavior. Unfortunately, the research on developmental relationships in particular has been done primarily in the United States.
14. Schein (1981) elaborates on the attitudes and skills necessary to work effectively cross-culturally. They include: self-insight, ability to take the perspective of the other, a proactive problem-solving orientation, personal flexibility, negotiation skills, interpersonal tact, and patience.
15. See annotated bibliography in online edition for relevant references
16. See, for example, Kanter (1997).
17. See, for example, Kram (1988).
18. Robin Ely, "An Empirical Study of Relationships Among White Professional Women at Work: Toward a Theoretical Framework for Understanding Interpersonal Relationships Among Individuals Traditionally Underrepresented in Positions of Organizational Power (John F. Kennedy School of Government, Harvard University), 1990.

This article reprinted with permission from The Harvard Business School case study #9-491-096. The accompanying annotated bibliography can be found online at: www.vanderbilt.edu/csma/newsletter/spectrum.htm

Pre-MAP: Evaluating Diversity Efforts... (cont'd)

Pre-MAP Interview Results: Student Self-Evaluation, Cohorts 1, 2, & 3

	Above	*Slightly Above*	*Similar*	*Slightly Below*	*Below*
Research Skills*	80%	10%	--	--	--
Critical Thinking/ Problem Solving	20%	40%	20%	10%	10%
Computer Knowledge	50%	10%	10%	10%	20%
Self-Confidence*	10%	40%	30%	--	10%
Academic Resources	60%	20%	--	20%	--

*10% of respondents felt they were unsure of how they rank in self-confidence

(Continued from page 15)

tribution to the course, and (4) the instructor's effectiveness in teaching the subject matter.

An agreement has also been made with CIDR to conduct a focus group at the end of the Pre-MAP seminar. A member of the CIDR staff leads the group, which emphasizes evaluation of student perceptions of their computing skills, interest in majoring in astronomy or another science field, and confidence with approaching faculty with questions. Since the Pre-MAP seminar does not include a final examination, the CIDR-led focus group occurs during the seminar's final exam time slot. Students begin by providing individual feedback on the class, then take part in a group discussion of the strengths and weaknesses of the program and how it could be improved. This focus group gives us early feedback on how to improve the Pre-MAP seminar and the first-quarter impacts that Pre-MAP is having on its students' academic goals and experience of the University.

In autumn 2007, five of eight members of cohort 3 completed CIDR focus group surveys evaluating their experience in Pre-MAP[10]; we did not conduct focus groups with cohorts 1 and 2 as this evaluation strategy was first implemented during the program's third year. These students assessed their own progress individually (on a scale of 5 to 1, where 5=Excellent, 1=Poor), and then discussed the strengths and weaknesses of Pre-MAP in smaller breakout groups. The participating students ranked almost every aspect of the program with a mean of 4 or above (mean ratings are included in parenthesis below). Highly ranked categories included interest in continuing to pursue astronomy

research and/or take additional astronomy course work (both 4.8), a positive response to choosing the astronomy major (4.6), the students' ability to explain their research to another Pre-MAP student (4.4), comfort with approaching a professor or TA with questions (4.4), and improvements in Linux, Interactive Data Language (IDL), and general computer knowledge (4.0). Students also positively evaluated the contribution of the Pre-MAP instructor to their experience at the UW (4.8). In the words of one student, "the [Pre-MAP] experience made me feel confident about future opportunities and approaching people in the department". The two categories in which the students indicated a need for improvement concerned their development in reading and writing about science (2.2) and improvement in giving presentations (2.8). The small group discussions focused again on the highly ranked topics; here students recognized that areas where they would like to see improvement may be difficult to implement in the short (10 week) timeframe of the course.

Real-Time Corrections

Although the longer-term evaluation schemes described above are indispensable to evaluating the ultimate success of Pre-MAP, there is something to be said for course corrections informed by the people on the front lines: the Pre-MAP instructor and students. During the autumn quarter, the Pre-MAP seminar instructor prepares a weekly blog summarizing the week's work and highlighting any difficulties students are having with course material or other problems that arise during the quarter. The blog is password protected but available to the en-

Supreme Court, Affirmative Action… (cont'd)

(Continued from page 5)

is that results matter" and that those results probably have to be more than minimal. Justice O'Connor in *Grutter* noted with clear approval that "these benefits [of diversity in the college student body] are not theoretical, but real." This expectation gains added force from the Court's emphasis in the Seattle and Louisville ruling on continuing review of diversity-driven plans, including regular balancing of burdens and benefits.

Current Considerations

What, then, should a conscientious academic administrator or admissions committee member do in such a confusing (and evolving) legal environment?

The first, and perhaps easiest, area to address is admissions policies as such. The "musts" or imperatives imposed by the Supreme Court are, of course, indispensable for any institution that wishes its race-inclusive admissions policy to survive legal challenge. Quotas must be avoided, individual applicants must be individually appraised to the greatest possible extent, factors other than race must be articulated and consistently applied, and educational benefits as well as educational judgments must form the core of any such policy.

> *"Keep in mind that we need deal only with issues that have actually been litigated and have been the focus of definitive court rulings."*

Clearly, many race-inclusive university admissions programs were carefully reviewed, and some were substantially modified, immediately after *Grutter*. That process will continue, and most likely will intensify, because of the Supreme Court's reaffirmation of the *Grutter* principles four years later. More vigorous action may now be warranted; former ACE general counsel Sheldon Steinbach warned, right after the Louisville and Seattle ruling, that the initial post-*Grutter* modifications may not have been sufficient to withstand future challenges, even though technically the legal landscape has not changed.

The suggestions in Justice O'Connor's *Grutter* opinion surely could be helpful in shaping admissions policies; they could be even more beneficial to a legal defense in the event of court challenge to admissions policies. Happily, incorporating the elements that Justice O'Connor deemed merely desir-

able but not essential should be easier than meeting the "musts." Establishing the link between racial sensitivity and institutional mission should not be difficult, nor should periodic and conscientious assessment of the impact of such a policy. The hardest of the imponderables may be that of time limitation: it is not clear that even Justice O'Connor—much less the more sympathetic justices who joined her in validating the Michigan Law School program—would really insist that race-inclusive policies cease to exist after 2028. Nonetheless, to assess the impact of any such program, one would have to consider the length of time such measures are likely to be needed and to remain in force. There is a strong argument, however, that Justice O'Connor's call for flexibility and the avoidance of quotas would militate against setting a precise date by which it will be no longer vital to consider race to achieve and maintain diversity.

The next thing to keep in mind is that we need deal only with issues that have actually been litigated and have been the focus of definitive court rulings. A report issued by the Civil Rights Project soon after the 2007 decision noted the tendency of many colleges and universities to overreact to less than favorable judgments. Such a caution is wise and timely. Questions will undoubtedly arise about the legality of financial aid, minority outreach and counseling, and a host of other university programs designed to enhance diversity.

Nevertheless, some universities may believe that a distinct and different case could be made for more explicit use of race in such analogous areas. An institution might assume that the Court's deep concern about race-driven admissions decisions at a highly selective institution does not necessarily—or even logically—carry over to financial aid and other benefits. Every reasonable effort should be made to avoid the understandable tendency to read court rulings on one particular facet of racial sensitivity as though they had broadly banned "affirmative action" in all aspects. Each of these issues will probably have its own day in court; until that day comes, prejudgment is unnecessary.

Bad News

There is another dimension to the recent ruling—one that also comes under the heading of bad news for higher education. While many were still celebrating the survival of *Grutter,* others in higher education sounded a more somber note. Gary Orfield, a professor at the University of California, Los Angeles, and codirector of the Civil Rights Project, and Erica Frankenburg and Liliana M. Garces, both research assistants at the Civil Rights Project, noted with alarm in *Inside Higher Ed* after the Seattle and Louisville ruling that "the dike protecting affirmative action has held but the river that brings diverse groups of students to colleges may be drying up as a result of the latest decisions." The pool of well-prepared minority high school graduates is shrinking, and the most selective institutions will be competing for them at an ever more vigorous pace. Longtime civil rights advocate Derek Bell made a similar point in even more ominous tones: "It is time," he wrote in the *Chronicle of Higher Education*, "to acknowledge that racial integration as the primary vehicle for providing effective schooling for black and Latino children has run its course."

> *"It is in admissions that the special nature of universities may have garnered the most useful recognition."*

Bell's was an urgent manifesto to his university colleagues: actively support and enhance secondary school programs and after-school initiatives that effectively reach minority youths—they now offer the last, best hope of sustaining an applicant pool to which *Grutter*-based racial sensitivity might apply. Otherwise, higher education's apparent victory in the Louisville and Seattle school cases will turn out to be Pyrrhic at best.

Cause for Hope

A final and far more hopeful dimension of the recent decisions has been almost wholly neglected: how valuable might the Roberts Court's continued deference to the special character of higher education prove to be in other settings?

Nice words from the Supreme Court are, of course, hardly new for the American academic community. Fifty years ago in *Sweezy v. New Hampshire*, the first major academic freedom ruling, the justices clearly recognized the distinctive case for protecting free expression and inquiry on the college campus. A decade later, Justice William Brennan gave the strongest possible role to those liberties in striking down the New York State loyalty oath. The high court's distinctive commitment to academic freedom has proved useful in other contexts—for example, in suggesting that university-based research deserves special protection, and differentiating for religious freedom purposes between elementary and secondary schools and universities. Such references are useful, but they turn out to have less practical import than might have been expected.

It is in admissions, however, that the special nature of universities may have garnered the most useful recognition. As far back as 1978, explaining in the *Bakke* case why he would validate race-sensitive admissions policies like those at Harvard, Justice Powell spoke eloquently of the value of academic freedom. Such recognition was the more welcome because it was in no way essential to Powell's disposition of the case. Yet one sensed that a judge of scholarly temperament, quite familiar with both Harvard and the universities of his native Virginia, seized an opportunity to convey his high confidence in the governance of faculties and academic institutions. "Academic freedom," he proclaimed, "though not a specifically enumerated constitutional right, long has been viewed as a special concern of the First Amendment. The freedom of a university to make its own judgments as to education includes the selection of its student body." Even to those observers who hoped for at least a split ruling of the sort that *Bakke* provided, such an explicit and profound encomium for academic freedom was beyond reasonable expectation.

Justice O'Connor's validation of race-inclusive policy a quarter century later in the University of Michigan admissions litigation not only reaffirmed but enhanced Justice Powell's analysis. She was driven in substantial part by a high degree of judicial deference to such an "educational judgment" as well as by "the expansive freedoms of speech and thought associated with the university environment," leading to the conclusion that "universities occupy a special niche in our constitutional tradition."

Pre-MAP: Evaluating Diversity Efforts... (cont'd)

tire Pre-MAP staff (including future instructors) and serves as a forum to discuss changes in the direction of the class, as well as minor curriculum adjustments. In a similar vein, we have created a Pre-MAP instructor wiki which serves both as a record of curriculum development efforts, as well as ensuring that student feedback regarding specific assignments is not forgotten as the torch is passed from one instructor to the next.

As a mirror to the blog and wiki, students write weekly essays summarizing their thoughts on the previous week's classes: what they understood, what they are shaky on, which areas they would like to spend more time on. During the second portion of the quarter, when the students are engaged in research, the writing assignments serve as a research log. These assignments are graded by the Pre-MAP instructor on a credit/no credit basis and serve to inform mid-flight corrections to the class curriculum or identify potential trouble spots in the research groups. The instructor returns his/her comments to the students, thereby creating an informal mode of communication between students and the instructor. The writing assignments have the added benefit of increasing the retention of class material by encouraging students to think critically about what they have learned. A similar in-class tool employs "minute papers" which occupy approximately the last five minutes of class. These quick-and-dirty notes list concepts and skills that were assimilated, as well as those that were not properly understood. These give the instructor a better sense of how to adapt the following classes' assignments.

Discussions and Conclusions

After just shy of three years, Pre-MAP is arriving at a point where enough quantitative data has accumulated that we can begin to see early positive trends in our student and departmental impacts. Through a combination of a well-maintained database, questionnaires, CIDR focus groups, and personal interviews, Pre-MAP should be able to successfully conduct a self-evaluation on a permanent and regu-

> *"Don't rely exclusively on quantitative data, since these require large numbers of students and long baselines."*

lar basis. Funds permitting, the Pre-MAP staff aims to hand over the longitudinal evaluation (annual, biannual, and long-term interviews) to an unbiased, external evaluator, e.g. the professional staff at the CWD. Since such services are considerably more expensive than the program's current budget, we have thus far elected to conduct the evaluation ourselves, under the generous tutelage of the CWD, CIDR[11], and the OEA. The data collected thus far begins to provide Pre-MAP with the concrete evidence we need to convince the University and outside funding agencies that our program has been and will continue to be successful. In addition, our assessments begin to highlight the components of the program that are most effective and those that are well suited for export to other departments and universities. Our evaluation also enables us to make improvements to the Pre-MAP seminar, the kingpin of the program.

As nascent evaluators of our undergraduate diversity program in astronomy, we offer this parting list of recommendations:

1. Set out both long-term goals for your program (e.g., increasing the number of underrepresented students graduating with astronomy degrees) and also intermediate milestones (e.g., helping students feel comfortable speaking to faculty about research). These near-term goals are often more straightforward to evaluate (e.g., interview the students and ask them whether or not they are comfortable speaking with faculty) and thus can act as early indicators of success (or failure).

2. Identify local resources (e.g. an instructional center or assessment office) and enlist those supports. You may be pleasantly surprised, as we have been, to discover a wealth of knowledge and expertise on your home turf.

3. Start data collection immediately and make sure to go beyond self-identification and GPA. Interviews with and complete demographics for a handful of students may not seem like much, but when carefully considered they can help determine how to improve the program, and also act as tool for convincing funders of the

program's feasibility and/or effectiveness.

4. Don't rely exclusively on quantitative data (e.g., graduation rates), since these require larger numbers of students and longer baselines than one-on-one interviews and questionnaires.

5. As the program evolves make sure to implement new evaluation strategies and reconsider your goals, or possibly formulate new ones.

6. Evaluating your program helps you improve it: one of the findings in our one-on-one student interviews was that the students felt a strong connection with Pre-MAP, but did not universally feel that they were part of the UW Astronomy Department community. As a result we have begun a pilot program, loosely referred to as "mentoring groups" for Pre-MAP students. In their first quarter of operation these groups, which include a blend of faculty, engineers, post docs, graduate students, and Pre-MAP students, were very well received. Similar mentoring groups will likely be expanded to the whole astronomy undergraduate population next fall.

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Endnotes

1. Pre-MAP defines groups underrepresented in STEM (science, technology, engineering and mathematics) as women, ethnic minorities (African American, Native American, Hispanic/Latino, Pacific Islander), disabled persons, low income, and first-generation college students.

2. See, for example, NSF 06—320, *Characteristics of Doctoral Scientists and Engineers in the United States: 2003*, National Science Foundation (Arlington, VA, 2006), and NSF 04—317, *Women, Minorities, and Persons with Disabilities in Science and Engineering: 2004*, National Science Foundation (Arlington, VA, 2004; updated May 2004).

3. Seymour, E. & Hewitt, N., *Talking About Leaving: Why Undergraduates Leave the Sciences*, Westview Press (Boulder, CO, 1997).

4. See the Pre-MAP Projects page (http://www.astro.washington.edu/premap/projects.php) for additional research projects and project descriptions.

5. Details on how we run the program on a day-to-day basis can be obtained by visiting the Pre-MAP website, http://www.astro.washington.edu/premap, and/or by contacting one of the authors.

6. The Center for Instructional Development and Research: http://depts.washington.edu/cidrweb/index.html

7. American Institute of Physics Statistical Research Center http://www.aip.org/statistics/ & unpublished data from Patrick Mulvey

8. Copies of our annual and end-of-quarter Pre-MAP interviews/surveys are available upon request.

9. The Center for Workforce Development: http://www.engr.washington.edu/cwd/

10. Summary of Pre-MAP End-of-Quarter Student Feedback, Collected by Wayne Jacobson, Center for Instructional Development and Research, December 13, 2007

11. Suzanne G. Brainard, Elizabeth Litzler, and Priti Modi at CWD and Wayne Jacobsen at CIDR have been instrumental in developing our evaluation plan to-date.

Supreme Court, Affirmative Action... (cont'd)

One might well have expected that Justice O'Connor's retirement would end such support for academic freedom and free inquiry. Chief Justice Roberts's reaffirmation was the more surprising, then, because Roberts quoted the key language from *Grutter* and used it in the Seattle and Louisville cases, which lacked any of those qualities that warranted special treatment in "the unique context of higher education." The contrast between secondary and postsecondary education could easily have been explained without any explicit reference to academic freedom and free inquiry in the university

setting. Perhaps we should simply be thankful for small favors; but, as we look at the situation as a whole, we may well conclude that we have been left with some that are not so small at all.

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