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Early-Stage Investigators and Institutional Interface: Importance of Organization in the Mentoring Culture of Today's Universities

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Abstract

Mentors have an active role in teaching mentees to scan their academic environments for the resources to advance their research careers, to assess the gaps between what's available and needed to succeed, and to develop strategies to fill these gaps. Yet achieving instrumentality is a necessary, but insufficient condition by which to accomplish the desired endpoints. Mentors and mentees must recognize that the organizations to which they belong are cultural in nature: characterized by vision, values, norms, systems, symbols, language, assumptions, beliefs, and habits. Understanding the collective behaviors and assumptions of peers and leaders in terms of the shared perceptions, thoughts, and feelings of organizational membership is essential to success. Institutions, in turn, must examine the extent to which they offer action possibilities: opportunities that promote the developmental trajectories of early stage investigators-in-training. Lack of awareness of the possible dissonance of this reality adversely affects many young faculty members.

Keywords

Early-stage investigators; research; career development; person-environment interaction; mentoring

INTRODUCTION

Regarding the diversification of the scientific workforce, I previously advocated greater attention to the conceptual underpinnings of efforts to promote the research careers of early-stage investigators, especially those of under-represented racial minorities.[1] I encouraged us to consider the notion of "academic persistence," borrowed from the critical thinking and experience that has characterized careful attempts to improve undergraduate and doctoral education. Academic persistence, I and others have argued, is best understood as a function of person-environment interaction, with probabilities of success increasing as individual histories, aspirations, and competencies align with the demand and opportunity structures of the institutions within which research careers unfold.

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While substantial discussion is now evident with respect to mentees as the “person” side of this equation, little consideration has been given to the institutional contexts, that is the “environment.” One consequence is that we chart a difficult path for younger colleagues by focusing so heavily on individual skills absent an equal focus on the resources, climate, and connections necessary to actualize the expectations that flow from the mastery of these skills. Regardless of how well we prepare early-stage investigators to envision themselves as scientists, to acquire pertinent knowledge, and to wield the requisite tools, unless the environments within which young scholars live and work – especially those who are underrepresented – provide the opportunities to activate and reward such competencies, we program them for failure, and risk leading them to conclude they are ineffectual and singularly responsible for their failure.

This paper begins at a familiar point of departure, reminding us that mentors have an active role to play in teaching mentees to scan their academic environments for the often compartmentalized, sometimes hidden resources to advance their research careers, to assess the gaps between what’s available and needed to succeed, and to develop strategies to fill these gaps. Yet achieving instrumentality is a necessary, but insufficient condition by which to accomplish the desired endpoints. I maintain as well that mentors should anticipate for mentees that the organizations to which they belong are cultural in nature: institutions characterized by vision, values, norms, systems, symbols, language, assumptions, beliefs, and habits. The novitiate must recognize and come to understand the collective behaviors and assumptions of peers and leaders in terms of the shared perceptions, thoughts, and feelings of organizational membership. This system of “meaning” defines accomplishments and ultimately success within the institution. The young investigator has to be able to determine, hopefully early in her tenure, if these definitions fit the developmental trajectory of one’s dreams. Lack of awareness of the possible dissonance, or belated recognition of its reality adversely affects the lives of many young faculty, under-represented minorities or not, in the academy.

Above I wrote “a familiar point of departure” because to this juncture, consistent with the direction of much of today’s discourse, the narrative has focused on the personal agency of the mentee, barely moving us to the outer edges of an individual-centered perspective. Institutions are equally important to the advancement of the research career of an early-stage investigator. In this regard, universities and their equivalents offer “action possibilities.” Action possibilities, as described in Gibson’s Theory of Affordances,[2] are latent features of the environment, objectively measurable and independent of an individual’s ability to recognize them, but meaningful in relation to the agent, in this case the young scholar, and therefore dependent upon her abilities. For example, stairs in which each step rises four feet high do not afford the act of climbing if the agent is an infant just learning to crawl. There are direct parallels to developing a research career, mentoring, and the contribution of universities to these processes. Later in this article, then, I describe the institutional environments within which early stage investigators typically find themselves, deconstruct the action possibilities, and illustrate through case examples the ways in which these possibilities can be introduced or modified to optimize advancement.

EDUCATIONAL INSTITUTIONS AS CULTURES

Universities and colleges can be thought of as comprising a culture, often referred to as academia, complete with its own organizing vision, values, principles, goals, structures, and processes. Academia embodies a particular professional life, usually likened to a three-legged stool that balances upon research, teaching, and service. Academic institutions, in turn, vary with respect to the relative emphasis they place on each of these "legs," an emphasis that distributes upwards from the stool's base in a graded, increasingly specialized fashion. The Carnegie Classification of Institutions of Higher Education[3] demarcated the educational leg in terms of degrees granted: ranging from associate, baccalaureate, masters, and doctoral to even more advanced professional levels of training referred to as special focus institutions. Likewise, Carnegie[3] delineated the research leg with respect to intensity of preparation for and engagement in scientific inquiry. Research Universities-Highest Research Activity, the focus of this discussion, for example, are distinguished from others by offering a full range of baccalaureate programs, being committed to graduate education through the doctorate, giving high priority to research, awarding a pre-specified number of doctoral degrees each year, and receiving annually millions of dollars in federal research support. The service leg is less clearly portrayed in hierarchical terms, but typically distinguishes between that which is internal and external in nature, with each type further differentiated by levels of service: department-, school-, or college/university-wide in scope and local, regional, national, or international in breadth, respectively. Expectations, evaluations, and rewards of faculty performance, contribution, and advancement are intimately tied to the emphases that an academic institution places on each of these three legs, and the height along each it assumes appropriate to its mission. This is the environment within which academicians live, and that early-stage investigators must navigate in order to successfully pursue their careers.

Faculty successfully passing through increasingly senior levels of membership in academia – usually marked by the ranks of instructor, assistant, associate, and full professor – have a clear sense of the professional self to which they aspire, understand how that self aligns with the opportunities and demands of the institution within which they work, and are productive in its terms. Stories about this journey seldom fail to credit the importance of a mentor in achieving this success. But these accounts most often cite the assistance faculty members received in advancing individual skill sets. Mentors are described as helping to sharpen the questions asked, to consider appropriate research methods, to analyze data, and to interpret as well as publish findings. Or to recognize that mentors introduced mentees to new course possibilities, improved their pedagogic techniques, and showed them creative ways to engage students. Then, too, there usually are examples of how mentors created professional service opportunities, linking mentees to agencies, organizations, and government entities that afforded them broader recognition and impact.

ENHANCING PERSONAL AGENCY IN NAVIGATING THE INSTITUTION

Woven throughout these stories, yet less likely to capture our notice, are tales of mentors equipping younger colleagues to scan the academic environment to make explicit its vision, mission, values, principles, goals, structures, and processes. Successful mentors enable

early-stage investigators to discover what, how, when, and why institutional features come into play in navigating various stages of academic life. They also teach -- through example, interrogation, debriefing -- the analysis of such "data." Understanding these matters as they unfold in one's own setting and anticipating their personal application is as critical as instrumental talents, e.g., grantsmanship, publishing, teaching, and speaking, are to promotion, tenure, and other rewards.

Learning to scan the institutional environment in this manner introduces young faculty to organizational structures and processes, and to the gatekeepers who populate key positions of responsibility and authority. They learn that the duties, expectations, assessments, and behaviors of these individuals are shaped by their organizational positions. Effective mentors push younger colleagues to take into account the perspectives of these gatekeepers in reflecting on the demands and opportunities that emanate from each, to assess the relative costs/benefits, to make timely, informed decisions based on career aspirations, and to present these decisions in ways that elicit continued support, for example, "turning aside" rather than "turning down" solicitations. Two examples powerfully illustrate this dynamic.

The first involves a young physician-scientist, who completed her residency in infectious disease and joined a medical school faculty as a newly minted assistant professor in a clinical track. Her clinical work in treating sexually transmitted diseases among American Indian adolescents captured the attention of the hospital's medical director, departmental division chief, residency training director, and head of the university's large, successful center on HIV/AIDS research. The medical director saw this physician as a means of extending the clinic's service to a neglected, high-risk population, which had occasioned considerable concern among the local community. The division chief envisioned her as representing the department and school on several committees seeking to bridge the university, Children's Hospital, and school health centers. The residency director anticipated she would proctor medical students, supervise residents, and teach in a new course on health disparities. The center director was anxious to capitalize on her presence as a means of launching a new line of research into risky behaviors among high need, but poorly understood minority youth. Flattered to receive attention from all quarters, far more than her peers, this new faculty member worked hard to meet the expectations of each in turn. Two years after joining the faculty, she was in tears, pulled in different directions, paralyzed, unable to satisfy anyone, including herself. Her service was found to be superior, teaching marginal, and research below expectations. Though this junior faculty's appointment was primarily clinical in nature, meritorious performance was required with respect to the other two legs of the stool. Her stay on the faculty was in jeopardy.

The second example is a social scientist just appointed to a tenure-track, assistant professorship at a well-established, widely respected school of public health. Also an underrepresented racial minority, he recently had finished a two-year post-doctoral appointment that gave rise to three peer-reviewed journal articles, with several more drafts in the making. The local community welcomed this faculty member, who was from their own background and immediately recruited him to join the board of a citizen group. His department chair, acknowledging that a portion of support was protected to pursue sponsored research, assigned him responsibility for teaching two core courses and two

electives the first year: one less each semester than two other new junior faculty. The dean enlisted him to assist with coordinating revisions of the school's diversity plan; the chancellor named this young man to a university-wide committee on enhancing diversity among its student body. In formulating their grant applications, senior faculty from across campus sought his participation as a co-investigator, focused on securing participation of local community members. Three years later, at mid-point review, his teaching performance in the core courses, which demanded predictably substantial preparation, received glowing student praise, as did his contributions to the various internal committees and planning groups. Likewise, the local community was pleased with the energy he brought to reviving an important, but stagnant community organization, resulting in even greater expectations as to subsequent involvement. But the several articles initiated during his postdoctoral period remained unfinished; no new ones were written in their stead. The school's appointment and promotion committee acknowledged the faculty member's excellence in teaching, deemed his service important, but only local and therefore limited, and voiced deep concern about poor scholarly productivity, noting that the research in which he was involved was not his own nor had his publication record grown since hired.

Both institutions proudly trumpeted the virtues of their mentoring programs; from the outset, each individual had been assigned a mentor drawn from his/her department, and met biannually with these advisers. But neither program was initially successful in guiding their respective mentees to the next level of academic advancement. What happened? More importantly, what didn't happen? Why? Were these young academics' careers salvaged? How?

A careful review of the respective mentoring programs revealed that the mentors emphasized acquiring specific skill sets related to each of the three legs of the academic stool. Individual development plans were carefully crafted, focusing on the competencies, tasks, timelines, and resources required to advance, were reviewed regularly, and adjustments were made as circumstances warranted. Both mentees were encouraged, and participated in seminars on writing for scientific publication, on efficiently searching relevant literatures, on managing references, on grantsmanship, on assembling effective posters, and on delivering engaging oral presentations. They also received instruction in pedagogic methods, using educational innovative technologies, and were supported to travel to several national conferences that introduced them to master teachers in their fields of expertise. Service obligations were monitored, and assessed with respect to appropriateness and overall effort. There was close attention to the instrumental activities and skills essential to each area of responsibility. Mentors and mentees analyzed the latter's needs, identified gaps, prioritized and secured internally available resources, and obtained those that existed beyond their institutional walls. The participants were quick to acknowledge that their institutions had invested significantly in them. But essential connections between the three legs of the stool were seldom, if ever made. The real-world source of this analogy has horizontal struts, at least one, often two sets that span at each pair of legs, ensuring its stability. Absent the equivalent, as was the case here, these young faculty members tottered on an uncertain foundation.

Individual development plans were never shared with either mentee's supervisors, thereby precluding the latter from being aware of their multiple, competing, even conflicting

demands. Not surprising, then, administrative and academic superiors, narrowly focused on the individuals' contributions to their respective areas of responsibility, and often found performance wanting. Neither mentor addressed with the mentee the specific expectations of his or her superiors, much less the institutional contexts within which these expectations were embedded. Mentees spoke of working hard to meet expectations; mentors agreed they did. Time management surfaced periodically as a topic of discussion, but almost always with respect to balancing tasks within an area of responsibility – teaching, research, and service – not across responsibilities. Mentees were not "working smart." Indeed, they did not know how to work smart in this setting. They were unaware of the need to take the perspectives of their superiors and lacked the ability do so. The mentees were ill equipped to sort through the importance and priority of expectations across domains. They did not know they could negotiate related tasks with superiors, nor how to negotiate -- concretely, respectfully, profitably – the timing, duration, and evidence of their completion. This was especially true of these particular mentees who, as members of disadvantaged populations, were reluctant to be seen as disappointing their superiors. Both were well schooled in the power differentials that often characterize such relationships, and the implicit biases about them, their competence, and commitment to larger institutional structures. Saying "no," in any form, for either individual had seldom been a viable option, in her or his personal as well as professional lives: the consequences, real and implied, frequently are punitive.

Faced with the prospect of failure, which was abhorrent to all concerned, and guided by senior leadership, mentors and mentees re-evaluated the process and emphases of their approach to career development within their respective institutions. Though the same instrumental skills continued to be valued, the scope broadened to include identifying faculty from like personal and disciplinary backgrounds who had navigated similar developmental trajectories. Mentees met with these "models of success" to learn of their personal and professional journeys, and to compare the relevance of those journeys to their own. They quickly were introduced to specific, tangible examples of the critical role of organizational perspective-taking, of the importance of examining intersections among the three legs of the academic stool, of informing superiors across all three domains of the totality of expectations, of the appropriateness of as well as techniques for negotiating expectations and related tasks, and of the need to balance competing demands. It became apparent that primary mentors, who shared neither the same commitment to community service nor understood the unspoken, but nevertheless real demands accompanying underrepresented racial minority status had missed these important realities. The mentees' "models of success" became valuable allies, not only as guides, but also as internal champions who schooled them in strategies of success, and subsequently promoted their positions and careers within the university.

SHIFTING THE FOCUS: INSTITUTIONS AND ACTION POSSIBILITIES

To this point, however, we have continued to focus on the individual as the active agent, as the expanded, yet still primary driver of career development within academia. Though the critical role of institutional environment is often recognized, and credited as important, many nevertheless assume individual faculty members are entirely responsible for their success or failure. A rigorous application of the person-environment interactional view forces us to

rethink the relative weight assigned to this equation. It pushes us to move from an egocentric view of career progression – from the self as locus of responsibility and of action – to a sociocentric view, a perspective that asserts that the structure of social relations within which faculty members are embedded deeply affects their behavior, shaping available choices, rewards, and outcomes. Institutional organizations, specifically universities, afford -- or not – opportunities to activate individual talents.

Affordance is the relation between an object (substitute "supervisor") or the environment (think "university") and an organism (read "junior faculty") that presents an opportunity for the latter to act. Stairs, for example, provide us the means to ascend or descend a building, to move from one floor to the next. I pointed out earlier that steps four feet high do not afford the act of climbing if the agent is an infant just learning to crawl. An affordance presents the possibility of action: it is not a *property* of either agent or the environment; it is the consequence of their interaction. Affordance, then, is relational, not subjective or intrinsic. Returning to research careers in academia, if universities do not offer early-stage investigators assets, structures, or processes that align with their ability to activate individual competencies, the likelihood of effective action, of advancement, of success is low.

Interjecting this perspective into the processes described above added a new dimension to how the mentees, mentors, departments, and schools in question approached mentoring. Committed to deconstructing the organizational environment, initial steps focused on understanding the forces that shape action possibilities, on recognizing possibilities in the workplace, on introducing, modifying, and increasing action possibilities, and on ensuring the relevance of such possibilities in a changing environment. In practice, then, mentees and mentors were required to develop sociograms of the structure and patterns of key group interactions, reflecting work relations, channels of influence, and lines of communication. Doing so forced new, unprecedented conversations with peers, senior faculty, administrative superiors, and community members. Mentees and mentors reviewed the emerging diagrams, and used them as the basis to discuss the former's place in the organization. Mentees were next assigned the task of articulating and mapping the expectations that flowed along the lines that connected them to significant others. Together with their mentors, they analyzed the relative priorities of these expectations, and considered the nature, direction, quality, frequency, and duration of communication necessary to their accomplishment.

It soon became apparent that certain organizational features actually compromised mentee performance. For example, the young assistant professor's school of public health, in principle, supported, even encouraged community-based participatory research. Quarterly seminars were convened to showcase such methods; community members were invited into the academic setting; these investigative techniques were touted as adding value to the relevant science. Yet, the realities of conducting the mentee's research within this framework ran afoul of key criteria for promotion within his university. Community-based participatory research is labor intensive, and typically demands accommodations between community expectations and study aims, design, and implementation. As a result, the products of such research are slower to materialize, may be characterized by less conventional methods, and can be subject to extraordinary levels of review and requirements for dissemination. These exigencies dramatically increased this mentee's time in the community, multiplied the effort

required to acquire the data, and affected receptivity of the ensuing manuscripts among high impact journals. At mid-course review, the school's appointment and promotion committee determined that his scholarly productivity – peer-reviewed journal articles, newly acquired sponsored research -- fell well below expectations. The evaluation criteria were poorly aligned with the nature of his research, which by other measures appeared appropriate, even praise worthy. Just as it is physically impossible for a newly crawling infant to negotiate four-foot steps, this junior faculty member was unable to meet the promotion criteria as operationalized and applied to his work.

The mentoring programs at both universities ultimately proved to be responsive, and embraced a more self-reflexive view of their respective efforts. Each paid increasingly closer attention to the roles that institutional structures and processes play in shaping action possibilities for early-stage investigators. Seminar series on research career development were launched, focusing equally on contributions of person and environment. Mentors and mentees co-presented, sharing strategies by which to assess and capitalize on action possibilities, employing concrete examples drawn from their immediate experiences. Discussions were initiated about improving the alignment and application of evaluation criteria to various forms of and approaches to teaching, service, and research. These discussions led to modest, but important revisions in how determinations of excellent and meritorious were operationalized in the promotion and tenure criteria. Fortunately, the young physician-scientist and assistant professor in public health benefitted from these changes: both eventually were promoted and enjoy satisfying, productive academic lives.

But why did the universities respond positively in these instances? Conversations with the deans of the respective schools were revealing. Leadership acknowledged longstanding pressure to recruit underrepresented racial and ethnic minority faculty, and that the success of such members was desirable, at least in principle, for reasons often spoken of in altruistic terms. Yet, it was not the first time young, promising faculty of color had failed to realize their potential, and left the institutions in question. An endless stream of candidates seemed ready to replace them, to try their hand at succeeding. One senior administrator observed: "Eventually, we recruit someone who fits our mold, and does well on our terms." There were no incentives to do anything differently.

These serial failures gradually became impossible to ignore, with respect to costs of recruitment and retention, poor morale of younger faculty, and emerging reputations as "… not great places to work." As importantly, the schools in question found themselves falling behind the curve with respect to securing external grant funding for health disparities research, seen as an increasingly profitable source of support for their scientific portfolios. Their leaders initially externalized the blame, railing about putative compromises in the review process and questioning advantages seemingly given to affiliation with the populations of interest, rather than focusing on the shortcomings of their own institutions. Ultimately, these excuses fell short. Both schools were forced to look inward, to acknowledge that their traditional specialization of roles, functional departmentalization, and operational hierarchies bore substantial responsibility for failure to recruit, retain, and advance junior faculty, notably those from disadvantaged, underrepresented backgrounds. That it took large scale, extra-organizational forces, which affected institutional

competitiveness and stability, to bring about this recognition speaks to the challenge in intervening structurally to improve our research mentoring and career development efforts.

THE ROAD AHEAD

Will we continue to (re-)discover the self-evident proposition that organizational structures and processes matter in developing research careers? If we come to that conclusion, and look to adjust our approaches to mentoring, will we continue to pursue largely egocentric strategies that locate responsibility and agency within the junior faculty member? Or will we adopt a more interactional view that places equal weight on the environment, that forces us to focus more deliberately and creatively on the structural opportunities afforded early-stage investigators as they navigate the attendant challenges?

A recent environmental scan of research training and development programs leaves me concerned that, if past precedent holds, we will continue to acknowledge the importance of organizational context and institutional structures for career advancement, but remain focused primarily on investigator-centered strategies for achieving success.[4] Published accounts of current training or mentoring approaches reveal little if any active intervention in regard to the former.[5–9]

The National Institutes of Health (NIH) just invested $20 million over the next 5 years to establish the National Research Mentoring Network (NRMN).[10] NRMN seeks to support the training and career development of individuals from diverse backgrounds interested in pursuing biomedical, behavioral, clinical, and social science research careers, through enhanced networking and mentorship experiences. It is developing a network of mentors and mentees that spans the disciplines relevant to the NIH mission. NRMN is also identifying and promoting best practices for mentoring, providing training opportunities for mentors, and creating networking and professional opportunities for mentees. It is a remarkable step forward, and builds upon an extensive and varied platform of other NIH intramural[11] as well as extramural[12] research training initiatives, that support many of the programs referenced here and throughout this special issue.

Like its predecessors, NRMN acknowledges the critical role that organizational climate, structures, and processes play in enabling early-stage investigators to exercise their new skills. Yet, NRMN is constrained from focusing on or investing resources in altering the institutional settings that house these young scholars. This new, important initiative explicitly sets aside the institutional context in which these young scholars' careers unfold. NRMN and its cognate programs, seem to argue – at least in practice – that the solution to enhancing the diversity of today's scientific workforce lies in increasing the numbers of mentees to be mentored, the faculty to mentor them, and improving their respective skills and expertise. I contend that these are necessary, but insufficient conditions to accomplish this goal.[13]

I fear that continued emphasis on the individual mentee, albeit broadened to include relationships with mentors, ignores the organizational processes and structures – the action possibilities – critical to activating the skills, knowledge, and talents they work so hard to

acquire and master. The danger in this approach is not only the possibility of tempering the likelihood of their success, but even more importantly, by perhaps programming these young scholars-in-training for failure, we risk them concluding they are ineffectual and singularly responsible for their lack of success. If this proves to be the case, the prospects of diversifying our scientific workforce, with the resultant benefits, will become even more difficult to realize.

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