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Academic Careers and Gender Equity: Lessons Learned from MIT[1]

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This article describes the experience at the Massachusetts Institute of Technology after the publication of its report *A Study on the Status of Women Faculty in Science at MIT*. It starts by describing aspects of the academic career that make it difficult for women, or anyone with responsibilities outside of their academic work. It then outlines three definitions of gender equity based on equality, fairness, and integration, and probes the reasons behind persisting inequities. The MIT results fit well into the first two definitions of gender equity, but fall short on the last. Finally, the article analyses the factors that came together at MIT to produce the outcome described and indicates the lessons learned and those still to be learned.

Keywords: academic careers, gender, equity, organizational change, professional-personal integration, gendered academic institutions

Introduction

In March 1999 MIT released a report called *A Study on the Status of Women Faculty in Science at MIT* (MIT, 1999). It was based on four years of intense work by a group of senior women scientists at MIT and two years of trying to figure out how to make the results public and share the learning. In the subsequent week lengthy analyses of this report appeared on the front pages of the *Boston Globe* and the *New York Times* (Goldberg, 1999; Zernike, 1999). The extraordinary response to this publication has had a profound effect on the awareness of gender as an issue at MIT and at many other universities both here and abroad. Before this media attention to the report, gender was silenced at MIT, despite incentives for hiring women and a special diversity assistant. Women in the School of Science had never before shared their experiences with each other and the proportion of women faculty in science had been steady for some 20 years. Since then, however, gender is on the table:

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it is definitely on the administration's agenda and women throughout the Institute are talking to each other and with colleagues all over the world about gender issues.

Though there have been many reports at many universities about the inequities that women faculty face, most have ended up on a shelf without any discernible effect. Similarly, analyses of gender in the academy and in science, and suggested improvements, have been available already for decades (e.g. Acker, 1983; Aisenberg and Harrington, 1988; Bernard, 1964; Bug, 2000; DeSole and Butler, 1990; Keller, 1992; Kemelgor and Etzkowitz, 2001; J.R. Martin, 2000) but have had little fundamental impact on universities and their procedures. This article outlines the details of what happened at MIT and tries to pinpoint what created the more supportive environment there. It anchors this story in the context of the academic career, what we mean by gender equity within it, and what accounts for the continuing inequities. Finally, it details what regarding gender in the academy is now accepted at MIT and what is still not in general awareness.

The academic career[2]

There are many wonderful things about an academic career. It provides more freedom and autonomy than most high-level endeavours, it allows one to work on things one really cares about, and the system of tenure provides a level of job security unheard of in most other occupations. At the same time, there are some characteristics that make it particularly demanding. An academic must fulfil multiple roles — teaching, research, service both to the university and to the profession — and that increases the level of demand. Indeed, it is a profession with a great deal of overload. Karl Weick (1970) has defined overload not as the amount of demands that are made on a person — what he calls the input — but as the relation of that input to the timing of output. In contrast to a manager, who is taught to handle things quickly as they arise and therefore has relatively little overload even though there are continuous demands on him (Weick, 1974), the academic has long periods before an output appears. Running an experiment, doing a field study, writing a book, are not things that can be disposed of quickly, hence by Weick's definition it is a profession with very high overload.

There is also another aspect of the career that increases the psychological demands it makes on faculty. A professor is supposed to be an expert in her field, one who has the answers to all questions. There is pressure, therefore, always to appear knowledgeable, never to have to ask for help. And that is a special burden. In contrast to management, for example, there are no consultants that can legitimately be brought in to help solve a problem. Mentors are recommended for junior faculty, but are not assumed necessary once one

has reached senior status (cf. Griffiths, 2000). So this, too, increases the psychological pressures of this profession.

Finally, at least in the United States, the tenure timetable, having to prove that you *are* this expert in the first seven years of the career, creates another difficult demand. All of this makes the ideal, the perfect academic someone who gives total priority to work and has no outside interests and responsibilities.

The latter is something the senior women faculty in science at MIT believe absolutely. They cannot conceive of any other way to be a first-rate scientist, which may explain why most of them are not married and have no children. And in some ways that may be the greatest inequity of all: the profession is set up in such a way that men academics routinely have families, while women, given current rules, find it much more difficult.[3]

Gender equity

So what do we mean by gender equity in the academy? There are a number of meanings, the first of which is the meaning embedded in the legal structure, which equates equity with equality: equal pay, equal access to opportunities to enter an occupation and to advance in it, and freedom from harassment. All of these are very important, and it was lack of this equality that was demonstrated in the MIT School of Science. Women faculty members were few in number relative to the existing pool; they also had lower pay and were much less likely to be in central positions within their departments. There has been much progress to ensure this equality, at MIT and in the workplace in general. But equality is still not the same as equity, and this definition ignores important aspects of equity. Equating equity with equality assumes the workplace is completely separate from the rest of life and thus ignores the fact that people have lives outside of their work. By being gender-neutral, this first definition ignores the different life experiences of men and women and makes the current 'male' model of the ideal academic normative. It assumes that women can follow this model as easily as men, and, if they do, will be seen as successful and as central as their male colleagues. Neither of these assumptions is true.

These considerations lead to a second definition which goes beyond equal opportunities, as important as they are, and is based on the realization that equal opportunity, even if it exists, is not equitable if constraints are very unequal. The argument is based on fairness, rather than equality, especially not equality limited only to the workplace.[4] Equity will not be possible if there exists one group of people (for example, people with care responsibilities) who are systematically unable to meet the requirements of the ideal academic who gives full priority and all his time and energy to his academic

work. Joan Williams, a lawyer, argues in her recent book, *Unbending Gender*, that since such a systematically disadvantaged group consists primarily of women, this situation is sex discrimination under current law and should be redressed in the courts (Williams, 2000). In other words, merely allowing women faculty to meet the criteria for academic success, on terms that have been defined by men and represent their life experiences, does not necessarily guarantee equity. Therefore, an equitable situation should entail equal opportunities *and* equal constraints (Bailyn, 1993; Rapoport *et al*., 2002).

As opposed to the first definition, based on workplace equality, this definition takes an academic's outside life into account. It has led to such practices as parental leave, stopping the tenure clock if you have a child, and so on. Again, all of these are very important. But because they do not alter the underlying expectations for promotion and tenure, they tend to be underutilized. Though this definition of gender equity represents an awareness of people's lives outside of their work and tries to accommodate their special needs, it does not deal with the issue that those people, primarily women, who might take advantage of these accommodations could pay serious career consequences.

So what is the ideal image of gender equity? Such a definition would be based on integration, rather than separation, of the public sphere of economic work and the private sphere of family, community, and other personal involvements. Though an ideal, one can see what would be required to realize such integration. On the societal level, on the level of cultural norms, it would mean full legitimation of the private sphere: activities there would be seen equally as important and would be equally as much valued as occupational activities. And on the part of the individual, it would mean equal commitment to each sphere.

Twenty-five years ago, the sociologist Stephen Marks wrote an interesting essay on the experience of scarcity of time and energy (Marks, 1977). His thesis was that this experience comes from unequal commitments, particularly from over-involvement with occupation as a source of identity. He posited that the experience of lack of time is more the result of this unequal commitment than it is of the actual number of hours available during the day. So gender equity in this third, ideal sense of full integration between the public and the private sphere, requires equalizing the value placed on economic and non-economic activity.[5]

But it is more than that. Such an integration would require also that work practices, structures, and cultural definitions of competence and success be embedded in the belief in, and acceptance of, a worker whose identity and commitments are legitimately anchored in both the occupational and the private world — what one might call an integrated worker, which contrasts sharply with the current image of the ideal worker as one whose sole and principal priority is to paid employment (Fletcher, 1999).[6] I have said that

this is an ideal, a vision. But it is critical to have this third vision in mind, even when working for strict pay equality. Because if we meet the criteria of equal opportunity and pay and even if we create policies to help people with families, but the ideal worker continues to be seen as one with no interests or responsibilities outside of work, then we will only recreate and reinforce existing practice. And that will continue to disadvantage women. True equity requires modification of these existing practices to fit the vision of integration.

As you can imagine, nothing that was done at MIT came close to this integrated vision. Indeed, there is a strong belief at MIT, and I suspect at most universities, that all existing procedures for judging talent and for making promotion and tenure decisions are fair and gender-neutral. The belief that merit can be judged completely objectively is a fundamental tenet underlying university practices. Hence the thought that to achieve gender equity one might have to reconsider some of these practices is very foreign. Nonetheless, real progress has been made at MIT on the first two definitions of gender equity. The number of women in top administrative, decision-making posts is now more than 10, up from 1 at the time of the report. There is now concern about and monitoring, in all the schools, of compensation and other resources to ensure that they are distributed equally to women.[7] And because it is now acknowledged that women faculty's lives typically encounter constraints that are different from those of their male colleagues, a number of new family care policies have been instituted.

Last year, MIT's president invited the presidents of eight other research universities, along with their provosts and two women faculty members from each university, to come to MIT for a day's discussion on women in academic science and engineering. It brought together the presidents of Cal Tech, Stanford, Berkeley, the University of Michigan, Harvard, Yale, Princeton, and Penn, along with their 'delegations', to meet with the MIT group for a Sunday dinner and an all-day discussion on Monday. Though some of these same schools had originally denied that their circumstances were similar to those at MIT, in the end, they all acknowledged that there was a problem and agreed to work in their universities toward three goals. First, to have the number of women on their faculties mirror the number they educate, to prevent the erosion of women in technical fields at each step of the career line, from undergraduate to graduate to post-doc to faculty, what has been called the leaking pipeline. Second, to ensure that those women already on their faculties have an equally positive experience as the men. Senior women faculty's experience of marginalization is pervasive, not only at MIT but at almost all the universities we have heard from. The final goal agreed to by these presidents is to have no faculty member — male or female — disadvantaged by family responsibilities whether for children, elders, or partners.

Persisting inequities

Despite these ambitious goals, and despite the fact that universities have been trying for many years to increase the number of women on their faculty, inequities still persist. Why?

In answering this question, I would like to ignore two arguments, even though they are still part of the beliefs of a number of groups in society. The first is that women do not have the skills, or the interests, or whatever, to do serious scholarly work. The other is that men intentionally discriminate because they do not want to share power. These beliefs still exist and have to be carefully monitored to prevent continuing inequalities in access to resources and positions of influence. But I suspect they are not the biggest part of the story, if for no other reason than they are covered by current laws. So I want, rather, to describe more subtle dynamics that are at work, and that exist both on the individual and the institutional level.

Virginia Valian, in her book, *Why So Slow?*, argues for a cognitive explanation of continuing inequity. She posits the existence of gender schemas, by which she means the implicit, largely non-conscious beliefs about sex differences that all of us, men and women alike, share. These schemas 'affect our expectations of men and women' and our evaluations of their performance. The 'most important consequence [of this] for professional work is that men are consistently overrated, while women are underrated' (Valian, 1998, p. 2). Thus professional women are at a slight disadvantage in every interaction, and these disadvantages cumulate over time to be big differences (ibid., pp. 3–6).

Gender schemas account for the fact that when experimentally comparing two identical CVs, one with a man's name and one with a woman's, the man gets a higher rating. The strength of this tendency is shown also in the following experiment. People are shown a story about a person who takes a welding course and fails it. There is a short paragraph explaining that the person had been sick and had missed a number of classes. When people who have read the story are asked 'Why did John fail the course?' the answer is that he was sick and missed classes. When asked 'Why did Jane fail the course?' the answer is because she is a woman. Women are not good at welding. This belief is so strong that it even overcomes information that is readily available. Gender schemas explain also the result of another experiment, where people rated a female CV for an academic position. In one condition, this CV was judged in a pool of eight, with the other seven being men; in the other condition the pool consisted of three women and five men. The CV in the former pool, where it represented the only woman, was judged significantly worse than in the latter. A single woman in a pool activates the gender schema, which brings along the implicit belief that women are not likely to be good academics because they somehow do not fit. But when there is more than one woman in the pool, then one has to make comparisons

among the women and the impact of the gender schema is lessened.[8] This experimental result, of course, has some obvious implications for academic recruitment.

These subtle dynamics in individual cognition are the ones we felt accounted for many of the inequities at MIT. Their effect is slowly being acknowledged, at least by those faculty and administrators who are genuinely concerned about this issue. Nonetheless, their pervasiveness requires continuous monitoring.

But there is more than individual cognition involved. Universities are gendered institutions (cf. Adams, 1983; Hochschild, 1994; J. Martin, 1994). What this means is that the academy is anchored in assumptions about competence and success that have led to practices and norms constructed around the life experiences of men, and around a vision of masculinity as the normal, universal requirement of university life. Howard Georgi, the Harvard physicist, has made this point. Scientists, he says, are expected to be assertive and competitive. But then he asks: are these characteristics really necessary to do good science? His feeling is that curiosity and persistence are more important, and that coding assertiveness as a requirement works against women, since they are less likely to have this characteristic, and, if they display it, more likely to be seen as difficult and disagreeable (Georgi, 2000). The fully autonomous expert role, already alluded to, is another characteristic associated with masculinity that may not be critical for first-rate scholarship. And of course the American tenure clock, which requires greatest effort during the childbearing years, is clearly better aligned with men's lives, as is the belief that to succeed in academia one must give first and total priority to one's work.

All of these assumptions and the practices associated with them disadvantage academic women. But they are so ingrained and so taken for granted, that one forgets that they are not God-given, but are constructed by mere men. Though assumed to be necessary attributes of the academic career, they are, in fact, social constructions. And I suspect that if most academics through the centuries hadn't been men who had women to support them as wives and assistants, the academy would not have evolved in this way.[9] As it is, many of these characteristics, now all bundled together into an image of the ideal academic, are probably not necessary to produce new knowledge or to educate the next generation. The practices of evaluation and assessment of reputation that stem from them may, in fact, detract from some university goals such as interdisciplinary work or student-centred teaching.

The possibility that such beliefs and assumptions, which disadvantage women, may actually have some unintended negative consequences for the university mission, provides room to consider alternative practices. Let me give an example (Rapoport *et al.*, 2002, especially pp. 92–7). We worked with a non-profit research foundation that provides grants to the developing world — not a university, but employing similar kinds of people. This organization was having problems recruiting women into their professional ranks,

and assumed this stemmed from workload pressures that made it difficult to find time and energy for the care of families. They therefore hoped that we could work with them to ease this workload and thus create a more equitable work environment.

We looked at this situation from two interrelated points of view, through what one might call an integrated gender lens. First, we tried to gauge the effect that the way they structured their work was having both on the quality of the work as well as on people's lives — the integrated part. And, second — the gender part — we looked at the differential impact of their policies and practices on men and women. From this analysis, a number of interesting things emerged. It became clear, for example, that what was most valued in the organization was the introduction of new ideas into the developing world. This meant a heavy schedule of travel, and an emphasis on conceiving new projects at the expense, often, of reaping the benefits of ongoing and finished ones.

The emphasis on travel, on what the organization called 'hands-on grant making', was clearly more complicated for those, mainly women, without home support. But it had an unanticipated effect also on the impact of the foundation's efforts, since it subtly discouraged their grant recipients from developing their own expertise in running the projects that were funded. Similarly, the emphasis on being recognized for having a new idea emphasized autonomous competence over the equally important, but less recognized or valued, competence of coordinating the information that emerged and helping the organization extract the critical learning from it. The former was deemed more professional and was more frequently carried out by male employees. Thus women, and others whose coordinating contributions were equally critical for the organization's goals, found themselves less likely to meet the characteristics deemed necessary to be promoted to professional status.

These dynamics were hidden from organizational leaders, who assumed that all their procedures were effective from the organizational point of view and completely gender-neutral. The potentially negative impact on both gender equity and effectiveness became obvious only by looking at the requirements of work through this integrated gender lens. And then it turned out that some of their practices could change, not only to create more equity, but also to enhance the impact of the work of both men and women. They began to rethink the necessity of frequent travel to the field, and they moved to a team organization in the hope of downplaying the one-sided emphasis on the individual new idea as the only critical part of their endeavour.

The value of using an integrated gender lens is evident also in the famous study published in *Nature* (Wennerås and Wold, 1997) about the award of fellowships by the Swedish Academy of Medicine. When a number of women extracted the records of the committee's decision criteria, they

demonstrated how much stronger a female applicant's case had to be in order to be considered for an award, and how ties between male applicants and Academy members played a role in these decisions. Though seemingly only a problem for women, what this study also pointed out is how the criteria being used were not as objective as had been assumed. As with the foundation, this analysis revealed a bias in favour of one particular group, which excluded most of the women applicants but also some of the men.

Gender equity, therefore, is furthered by viewing work processes through such an integrated gender lens. By doing so we reveal taken-for-granted and largely non-conscious assumptions underlying entrenched academic practices that can then be deliberately questioned. And in this way, it may be possible to find alternatives to the way that work is currently being accomplished that could be more equitable. In a US research university, for example, one might ask whether the early pressure to produce because of the rigid tenure timetable actually leads to better scholarship in the long run. It certainly makes life more difficult for women, and a critical look at this practice might well show some unintended negative consequences also for men, as well as for overall university goals. In the UK, one might want to ask similar questions about the research assessment exercise. One could also ask whether the quantity of published articles is the only way to judge a person's contribution to the university enterprise. And certain rules of authorship might come under question: for example, should the head of a lab, usually male, always be the first author? None of these questions have easy answers. My point is that they are not ever asked, because the rules are so taken for granted and so assumed to be absolutely necessary for the success of the academic endeavour. But most of these rules are gendered in the sense that they favour men's experiences and favour characteristics associated with masculine behaviour. And thus they contribute to the inequities we find in academia. Furthermore, the pressures and demands that flow from them may possibly not be optimal for the most creative work.[10]

The MIT story

At MIT we have not yet applied such an integrated gender lens. Though the MIT Report led to many good things, there also are aspects that have not yet been touched. Briefly, the women faculty in science, by working collectively and collaboratively with the administration, demonstrated to the Dean of the School of Science that there really were unjustified inequalities. Some of these women scientists, whose quality the Dean knew well, were getting lower salaries and had less lab space than men in their fields whose work was equally and in some cases less important than theirs. As soon as the Dean became aware of these discrepancies, he began to make changes, and even

before the women gave him their final report, salaries and space allocations had been adjusted. The interesting question, however, is why he had not been aware of this before. All MIT salaries are reviewed once a year by the Academic Council, department by department. But this discrepancy had never been noticed. Why? The answer lies mainly in the dispersion of the women across departments (Hopkins, 1999). Every individual case can always be explained, and with only one or two women in each department, it was impossible to identify a pattern. It was only when the women across all of these departments got together and presented their collective concerns, that the inequalities became evident.

Once the Dean and the President began to look at this pattern, they came to two important conclusions. First, this situation will not change just by waiting. The argument that women have only recently entered these fields and all will be well if we just wait long enough, clearly was not applicable here. Indeed, the percentage of women faculty in the School of Science had remained constant for 20 years. Furthermore, the problems unearthed by this committee applied to women who *had* made it, who were in the National Academies, who were doing significant work, and yet had fallen behind their male colleagues in compensation, lab space, and centrality within their departments. This realization led to the second conclusion, namely, that there was a systemic pattern here, not something that could be explained individually, and not of anyone's design or purpose.

Four years of hard work by the women enabled the President and Dean to reach these conclusions. In the end, these women faculty were in a much more favourable position: their morale was up and their work blossomed. And there it might have stayed. A group of women who felt unequally treated had decided not to seek legal redress but to attempt collectively to prove to their Dean and President that this was reality not perception, had succeeded in this, and through the Dean's response reached a more equitable and more satisfactory position. But they also felt that this problem existed outside the School of Science, and they feared that the dynamics that had created the situation in the first place could easily recur. They wanted to inform and educate the community. The problem was that the data that convinced the Dean were highly confidential. The original report outlined in great detail, department by department, personal material that was very private, often embarrassing, and no one wanted it to be made public. After a number of revisions that were still not publishable, we decided on a narrative report of what had happened, how it came about and how the Dean responded. Our intent was to inform the MIT faculty. But when the report hit the front page of the *New York Times*, it informed a much wider audience.

So, two years after the seeming end of the affair and five years after the committee started its work, the real impact began, on MIT and beyond. In trying to assess what factors have accounted for this outcome, I think that there are several points, all of which had to come together.[11]

A committed champion

Nothing would have happened at MIT if a woman scientist out of frustration, anger, and despair about her situation had not decided to do something. She had been asking for some modest resources and had been complaining about her treatment for some time and finally, reluctantly, came to the conclusion that what was impeding her research and putting unnecessary obstacles in her path was not her fault, but a result of gender discrimination. And so she wrote a strong letter to the President. But, fearful that it might be dismissed out of hand, she showed it to a respected colleague.

A point of connection

In her own words, 'the world changed forever' (Hopkins, 1999) when this woman not only took the letter seriously but asked if she could sign it. Based on this point of connection, the two of them decided to talk to the other women faculty in science and discovered that all but one agreed with the essential points and signed the letter. From then on they always worked collectively, never proceeding without the consensus of all the women involved. But what to do next?

Collecting data

Being encouraged by learning that this was a problem not of each of their own doing, and being scientists, they felt they wanted to collect data to 'prove' their point. They wanted to compare salaries within specific fields and sub-fields, they wanted to compare space allocations, they were curious about teaching and committee assignments. But these data are not readily available in a private university. Making a legal case would have produced them. But the women preferred to do it collaboratively. So they wrote a letter to the Dean asking him to appoint a committee to collect these data more systematically.

Working with the Dean

Not only did the Dean have these data, but he also had the power to fix things, and redress was their primary goal. The Dean responded positively — a key point. Having received their letter, he had already looked into the data and found that their allegations had merit. He also quickly began to fix some of the inequities he discovered. Later he was to say that it was a group of women, many of whom he knew to be excellent scientists, sitting in his office and all telling the same story that convinced him there was something seriously wrong. So he agreed to their committee.

Appointing the committee

Not all the Department Heads in the School were happy with this idea. And it took some time and some persuasion actually to get the committee going. One of the things the Dean insisted on was that the committee, besides one senior woman member from each department, would also have some men on it. The women were not in favour of this and asked that if men were to be on the committee, they should be powerful. The Dean agreed. In the end the men turned out to be very important. It was they who carried the credibility of the committee. And, since they knew how the system worked, they were an important source of information for the women, almost none of whom had ever been in an administrative or other central position in their departments.

The findings

The committee, in constant negotiation with the Dean and Department Heads, collected much of the data they wanted. Salaries were not shared with them except in aggregate, but the Dean had already seen that there were several cases of unreasonable salary disparities and had begun to make changes. At first, space data were not readily available, so they did some measuring of their own. Later, very detailed data were obtained for space and research volume so that the amount of space and grant money for men v. women could be determined accurately. Of course, with so few women it was not possible to do any meaningful statistical analysis. But in combination with extensive interviews with each of the senior women, the report painted a discouraging but convincing picture of the situation in different departments in the School.

From private to public

With all the changes introduced by the Dean, the women were now much happier. But it was all very private. Only the Dean, the President and Provost, and the Department Heads in the School of Science knew anything about what had happened. One meeting with the chief faculty governance committee increased this number by only a few. Finally, two years after the first report was written and five years after the initial committee was formed, a woman faculty chair reintroduced the topic into the governance committee and asked how one could get a document that could be disseminated to all the faculty. The decision was made to write a narrative report, detailing the story of what had happened and how the institution had responded. This version came to be known as the MIT Report.

The media

At a meeting of science journalists the role of women scientists at top universities came under discussion. One reporter, from the *Boston Globe*, followed up and eventually wrote the front-page story that took the discussion outside the university and into the public domain (Zernike, 1999). The *New York Times* followed two days later (Goldberg, 1999). The fact that these newspaper reporters took a positive stance, not only reporting that MIT had discriminated against women but congratulating the Institute for admitting it and doing something about it, shows that this was a story ready to be told. They all highlighted the personal comments of the MIT president who wrote, in his comment on the report:

> I have always believed that contemporary gender discrimination within universities is part reality and part perception . . . but I now understand that reality is by far the greater part of the balance. (MIT, 1999, p. 2)

These newspaper reports started an avalanche of responses from all over the United States and many places abroad. The champion who had started it all was invited to the White House and was thanked by the Clintons for her, her colleagues', and MIT's service to the nation for naming a problem and putting steps into effect to deal with it.

It really took all of these factors to bring about the positive outcome that resulted from the MIT Report. It was a combination of will, persistence, good timing, and good luck.

Conclusion

So where are we at MIT? What are the lessons learned? Before all of this, gender had been silenced at MIT, as at most universities. Women might occasionally talk to each other about these matters, but even that was unlikely. Each person assumed that what happened to her was entirely due to her own behaviour and thus must be deserved. The situation is very different now. The women faculty are getting together to talk with each other and share experiences, and gender is on the agenda of the top administration. And the numbers of women have increased. What is now accepted, at least by the women and the top administration, though not by everyone by any means, is that there are subtle gender dynamics that contribute to the leaking pipeline and to the more negative experience of the women senior faculty in comparison to their male colleagues.

And there is beginning to be recognition that the fact that most of the senior women faculty are not married and do not have children is not only

an individual concern, but has serious educational implications. We often hear from female graduate students that they are opting out of academic careers (cf. Kemelgor and Etzkowitz, 2001). They take one look at the life of the female faculty and decide they don't want it. Hence this presumably individual choice is actually contributing to the leaking pipeline. It has also become clear that the junior women faculty are no longer as willing to make these same family choices, and some of the junior men are also hoping to get more involved with their families. Hence progress on the first two definitions of gender equity: equality and fairness. Less, however, on the vision of integration — of legitimating and valuing people's personal lives.

In a study of biotech firms, for example, we found close to a fifty-fifty male/female division among the scientists (Carré and Rayman *et al.*, 1999; Eaton, 1999). When we interviewed some of these employees, most of whom had been post-docs at a university and had expected to have an academic career, they told us that they preferred the biotech environment because there they could do their scientific work with proper support without having to fight for tenure, or to worry about where the next grant is coming from. And though the men also reported this feeling, it came more often from the women. The pace, they said, was different and the focus was clearer, which made it easier to combine work with family.

Hence the rules and practices, both formal and informal, that currently exist in research universities, may sooner or later prevent them from recruiting the best available talent. It is particularly important, therefore, that the university presidents, at the meeting we had, set out as one of their goals that no faculty member should be disadvantaged by having a family. We need to model a better life for our students if we want to attract the best of them to the academy.

So, despite the important progress we feel we have made, there still are aspects of the situation that are not yet under consideration. There still is very little awareness at MIT, and I suspect elsewhere as well, of the gendered nature of academic rules: how criteria of evaluation, timing expectations, conventions of authorship — to name a few — help men more than women. Nor is there awareness that reputations are constructed, and cumulate from slight advantages that favour men, and slight inequities that disadvantage women (Valian, 1998). This, I think, is a key remaining challenge: to unearth the gendered aspects of academic life, in order to be able to question their continuing applicability, particularly for women faculty.[12]

At MIT, we feel we have come a long way. We are now using the experience of the women faculty in the School of Science to ensure that women in all the schools are treated fairly, and that everyone understands the rules. What we are not yet doing, and what eventually will be necessary if academic careers are to be truly equitable, is to question the nature of the rules themselves.

Notes

1. Earlier versions of this article were presented as the Athena Lecture at Imperial College, London, on 15 May 2001, and at the University of Delaware on 18 April 2002.
2. Based on Bailyn (1993), pp. 49–54.
3. See Hewlett (2002a, 2002b) for a chilling account of the implications of the 'creeping non-choice' of some powerful women not to have children.
4. A corollary, not discussed here, involves 'equality' for men in family involvements.
5. See Rapoport *et al.* (2002, pp. 36–8) for a 'vision of integration'.
6. To be completely feasible, this picture would also require change in the notion of an ideal caretaker as someone who spends all her time in caring activities.
7. One of MIT's responses to the Science Report was to establish gender committees in the other four schools of MIT (Architecture and Planning; Engineering; Humanities, Arts, and Social Sciences; Sloan School of Management). These reports, along with an update on the School of Science, were released in March 2002. They are available at *http://web.mit.edu/faculty/reports/provost.html*. See also Healy (2002).
8. All these examples are taken from Valian (1998).
9. For new ideas about the implementation of tenure rules to fit a diverse academy, see Trower and Chait (2002). And Creamer (1998, quoted in Bellas and Toutkoushian, 1999) attributes the 'stubbornly homogeneous' profile of US faculty to a traditional, unnecessarily narrow definition of faculty productivity.
10. A number of recent surveys of university faculty show the low quality of life and high stress and burnout of faculty when compared to university administrators or to corporate employees (personal communication).
11. Many of the details on which this analysis is based come from Hopkins (1999). See also Wilson (1999).
12. See Rapoport *et al.* (2002) and Ely and Meyerson (2000) for discussions of how to reduce gender inequities by such an analysis.

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