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EVIDENCE FROM THE BIOTECH SECTOR COURTS**

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**The Emergence of a Social Contract:
Evidence from the Biotech Sector**

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ABSTRACT

In survey research with nearly 500 professional and technical workers in relatively small, new, and insecure biotechnology firms, I find that there is nothing like a clear or consistent “social contract” emerging between workers and employers. Specifically, three-quarters of workers do not expect employers to provide a lifetime job, though more like half of them had expected that when they began working; women are slightly more likely to believe long-term employment should or could be provided than men are. However, I found that workers do feel ties to individual firms for reasons related to their specific work and its meaning to them, their closeness to particular coworkers and managers, and their relationship to a host of work-family issues, particularly their ability to control the pace, place, and timing of work. In addition, they value some firm-specific financial incentives (401-Ks, stock options, etc.) but these are secondary to their day to day work and life issues. Layoffs still generate dismay and distress among these so-called “boundaryless” workers, even when they believe there is a compelling business reason for them. More perceived control of work and real access to flexibility are associated with higher levels of organizational commitment in this biotech sector sample.

“Loyalty? It doesn't exist. I wonder why any employee would expect that the company would be loyal to them, when tomorrow, they could lay you off. Of course, I will work to a level where I earn my pay, and do professional work. That is internalized. But it can make you cynical. I have seen it too many times-- people have put in day and night, a lot of time, and hours, then were chopped off by the company with nothing [*emphasizes CHOPPED with a gesture and louder voice*]. Frankly, I don't see how they can expect from you what they are not willing to give you.”

- A female quality control scientist manager at a small biotech firm, later denied part-time work after the birth of her second child, terminated, and re-hired as a contractor three days a week.

Introduction

Careers are changing rapidly, especially in knowledge-based professions. Established expectations for long-term employment in a single firm with regular upward progression appear under serious challenge. Some authors have suggested that the implicit social and employment “contract” of the postwar period is breaking down, and being replaced by a much less clear, less mutual, and less binding set of expectations between employers and employees (e.g. Kochan 1997, Kanter 1990). Other scholars note the “fraying” of the psychological contract that used to bind employers and employees together (De Meuse and Tornow 1990, Robinson and Rousseau 1994, Rousseau and Parks 1993, Rousseau 1995).

Researchers’ conception of the social or employment contract seems to require updating for at least two reasons. First, if there ever was an implicit “employment contract,” it is changing dramatically. For one thing, it no longer concerns employment alone, since key workplace decisions have implications for family life, and vice versa. Nor is it even clearly any longer a “contract,” if it ever was, outside the unionized sector and a small percentage of executives. Rather the relationship, or multiple relationships, seem to be governed by an emergent, frequently changing, interactive set of adaptations

which vary by individual, occupation, firm, and perhaps even family status (Fletcher and Bailyn 1996). Lotte Bailyn and I argue elsewhere that this requires a new conception of the employment relationship, which is more fluid, more adaptable to different life stages and needs, and more variable than the traditional conceptions found in current industrial relations/human resources or most organizational behavior literature.¹

In this paper, I focus on the expectations and experiences of employment of a group of 500 or so professional and technical employees who work in the relatively new biotechnology industry. I approach this with two assumptions based on previous research (Bailyn 1993, Bailyn and Rapoport 1996, e.g.). First, boundaries between work and "not work" are blurring in many of today's workplaces; and second, workplace expectations are changing not only because employers want them to, but because employees' lives are changing as well. I pay attention to making gender issues explicit, as I think they are often overlooked. While the changing social contract is relevant for both employers and workers, I focus here on issues of employee attachment to the employer, including organizational commitment, loyalty, and expectations of a "lifetime job."

I find here that the professional employees I surveyed are less oriented toward long-term employment than their less-educated colleagues or their parents were. Also, for both women and men, the ability to use control their conditions of work, including when and where it is done, is associated with higher levels of organizational commitment.

Why does loyalty matter?

Managers try to foster organizational commitment, or positive feelings of loyalty, because high committed individuals are reported to be better performers, are more

¹ See my essay with Lotte Bailyn, "Career as Life Path: Tracing Work and Life Strategies of Professionals in Firms of the Future," forthcoming in *Conversations in Career Theory*, edited by Maury Peiperl and Michael Arthur, Oxford University Press, 2000.

aligned with the organization's goals, and are less likely to seek jobs elsewhere (Lincoln and Kalleberg 1992). "However, popular literature has suggested that workers can no longer afford to be committed to organizations in the wake of reengineering, mass layoffs, and corporate restructuring... Rather, workers are encouraged to align more with their careers, and less with employers—so because of this 'radical change in orientation,' researchers have intensified their examination of commitment in the careers domain" (Carson et al, 1997).² Organizational commitment is most often measured by a series of survey questions regarding employees' willingness to exert extra effort in their work, their agreement with employer values, and their identity with their firm (Mowday, Porter, and Steers 1979).

Research Questions:

The research questions for this paper are: What evidence, if any, is there of a new social "contract," or set of employee understandings of employer obligations, in the biotechnology industry? If it exists, how does it relate to organizational commitment and the day-to-day organization of work.

The Research Context

Most existing industrial relations research analyzes what occurs within the boundaries of the workplace. It may focus mainly on vertical relationships between workers and managers, or unions and management, or sometimes on horizontal relations among workers, managers, or functional groups. Recent work on teams, empowering work structures and mutual gains bargaining, fall in these categories (see Kochan and Osterman 1995, and Appelbaum and Batt 1994, for good overviews). Many micro-

² There are possible conflicts between career and organizational commitment, first noted by Gouldner, but some researchers report not a contest, but a positive synergy between the two.

organizational behavior and human resources management studies focus on interactions among people at the workplace, sometimes in the context of improving their relationships at work itself. The sociology of work literature pays more attention to the structure of work, including issues of control, autonomy, interdependence, and tacit skills and knowledge. These represent important lenses through which to view work, and I rely on all of them here..

However, they are not sufficient, because work has changed, and the situations of people doing the work have also changed. The boundaries of the workplace are no longer as clear and delimited as they once were. Work is being taken outside the office and often to the employee's "home" via home offices, voice mail, electronic mail, facsimiles, telecommuting, "virtual" offices, teleconferencing, overnight mail, and other mechanisms made possible by new technology. White collar and professional work especially spills over into non-traditional hours and places. Geographical distance no longer means what it did in the past.

People are also bringing their home and family-based concerns into work, and not just in framed pictures of smiling wives and children on male executives' desks. Some large firms have set up child care centers, nursing sites, employee assistance plans, in-house gyms and dry cleaning services, and even support diversity training and interest groups based on gender, sexual orientation, race, disability, and other formerly 'private' identities.³ With two working parents the norm in most families, more parents must organize their hours of work around their children's child care and also their before and after-school arrangements. With more than half of today's marriages ending in divorce, complex stepfamilies and child custody sharing arrangements are becoming common. This new reality affects the times and places when work can occur at a traditional workplace, and also changes who determines the boundaries-- now teachers, step-parents,

³ This was never a fully "true" picture, but represented the prevailing ideology. The 'ideal worker' left family concerns at home, and also, the ideal parent did not bring work home. See Nippert-Eng (1996) on boundaries, Bailyn (1993) on ideal workers, and Fletcher (1999) on public-private distinctions.

and day care providers are weighing in along with supervisors and executives. These and other changes indicate that the boundaries of the workplace are becoming more fluid and porous.

Who works in the workplace has also changed, and with this arise new areas of concern for the employment relationship. At least a third of adult women always worked in the US in the 20th century, many of them full-time. Now a majority of women between the ages of 18 and 65 are in the labor force, and they comprise 47% of the total workforce. This includes a majority (62%) of mothers of children under six years old. At the same time, men's labor force participation in the same age bracket has declined from 92% to 65%, and the two figures are converging. Couples at most rungs on the income ladder are now two-job or two-career couples for most of their lives.

This new reality changes pressures on the family, on the workplace, and on the individuals involved, particularly in the area of 'who's taking care of the children' and of rethinking traditional gender roles (Hochschild 1997). Finally, increasing inequality in hours worked (as well as income) means that those at the top of the labor market are working more hours, while those at the bottom are actually working fewer hours, often in contingent or part-time jobs (even though three-quarters of part-time workers want full-time work). While pressures from the "time squeeze" are not evenly distributed across the workforce, they are clearly part of the stress felt at work by an increasing number of workers.⁴ Further, more than in the past, an individual's life choices are complicated by the career and life choices of his or her partner, and by children or elders who need care, time, and attention at unpredictable times. Long-term employment is bounded not only

⁴ See 1999 data from the Census Bureau showing that 25% of fathers are now caring for preschoolers, down from 30% in 1991, suggesting that as economic times change, pressures on fathers to work more hours also change, therefore affecting home life significantly. Capelli (1999) in his chapter 6 says between 46 to 72% of employees report high stress at work, much higher than in previous decades; compare 30% in Sweden. Of course, the social context matters too, particularly the extent of support for family needs and for time off from work for family or personal concerns. I am only studying US workers, although I believe comparative analysis, particularly with the Nordic countries or Western Europe other than the UK, would strengthen my argument. There is a whole series of interesting studies on the 'time squeeze,' including Schor 1991, Robinson 1997, etc.

by a firm's desires or the nature of an occupation, but by many other factors, including the location and occupation of one's significant others.

Whatever felt or assumed employment contract exists seems to be less of an implicit long-term one. An assumption of commitment in exchange for security is no longer a reliable one to make, according to polls of both employers and employees (Heckscher 1995; Capelli *et al*, 1997). Employees are being asked to forgo work rules and traditions, to become flexible members of a new mobile workforce, and to fill many roles. At the same time, the employment security and internal career ladders which often tied them to one employer are no longer "taken for granted," and may be explicitly negated in a hiring or reorganization announcement or agreement. Firms are experiencing more pressures, from global competition and shareholder demands for continually increasing profits, and employees are experiencing those pressures transmitted to them directly, in the form of restructuring, permanent layoffs, and mergers and acquisitions (Osterman 1999).

Employees are thus encouraged to take responsibility for their own 'employability,' including their own professional development, and career plans. At the same time, firms also want employees to make themselves more available, on a more flexible basis, to do what needs to be done to keep customers happy. This paradox (requiring more engagement and ability to be flexible in work arrangements from employees while offering less commitment to job security by employers) is defended by business leaders as part of a 'new global reality' in which they must respond to shareholder needs and international competition, or have their existence threatened. To summarize, since the 1970s, "we have effectively aborted the old, plodding, cradle-to-grave work covenant for a dynamic, far more competitive, here-today, maybe gone-tomorrow work contract" (Garcia 1997). Thus the economic and social context of the

employment contract involves increasing pressure on the entire society, firms, employees, and families.⁵

We know more about how organizational expectations and demands are changing than we do about employees' abilities to integrate their lives and work given both the new demands at work and their new personal situations (usually different from their parents' arrangements, for instance). The dissertation on which this study is based centers on the "interaction" between work demands, and the needs of employees for their lives outside of work (including the needs of their partners and families). I look for patterns, within work groups, firms, and organizations, and within family types as well.

My focus in this paper, like that of Denise Rousseau in her work on psychological contracts (1995, 1990), is on the employee's expectations, though I also try to understand the employer's motivation. It is hard to argue that these expectations are held collectively, though my survey data allows us to see what is common between workers at the same companies. It is also difficult to parse out psychological, legal, cultural, social, or economic aspects of any such expectations. Here I am concerned with the employee's self-reported expectations and experience. I am curious as to whether the "contract" (if it exists) contributes to the likelihood of getting things done. Since the study is cross-sectional, I cannot say what happens when the 'contract' changes, for whatever reason. And it is always hard to tell what kinds of reciprocity, if any, are involved—though the quotation from a scientist at the beginning of this paper makes clear that at least some employees do not feel any loyalty is owed if it is not offered. Finally, I wonder if the 'contract' is structured differently in the case of individuals or groups with high labor

⁵ Of course, unionized companies are completely different with respect to the employment contract. Some have bargained for employment security, along with a host of other agreements about work, benefits, and working conditions. In non-union enterprises such as biotechnology, no formal employment contract exists, except for the chief executive officer and perhaps a few other highly compensated officers. However, some scholars argue that an informal contract exists, consisting of mutually agreed understandings, even if they are implicit.

market power, such as the professionals in my study. In future work, I would compare their experiences with a broader sample, including more production workers.

A. Industry Background

I wanted to study an industry in which the increasing economic pressures described above are particularly salient. Smaller, newer, entrepreneurial, networked firms operating internationally, with a high representation of “knowledge workers” would characterize such an industry. Job security would be negligible or non-existent, and turnover relatively high. Performance might be rewarded in a contingent way, with bonuses and stock options for many employees related to the performance of the firm. Long-term compensation would be nearly absent except as workers chose to invest in stock with their own resources. In the future, we might expect that men and women would be equally represented in many jobs.

Biotechnology qualifies as such an industry. It includes those companies that engage in the research, development, production, and commercialization of products using recombinant DNA, cell fusion, and novel bioprocessing techniques (Office of Technology Assessment 1991).⁶ Biotechnology came into being as a result of revolutionary advances in biology in the 1970s. While early success in actually “designing” drugs rather than simply finding them or creating them through chemical means led to excitement and a rush of financing to the industry, the pace and productivity of development did not continue as more complex diseases and product disappointments

⁶ Much research cited in this paper in the biotechnology industry was conducted under a grant from the Alfred P. Sloan Foundation to the Radcliffe Public Policy Institute at Radcliffe College, and with the support of Professor Lotte Bailyn at MIT. The Sloan Foundation project team includes: Françoise Carré (Co-principal Investigator), Paula Rayman (Co-Principal Investigator), Lotte Bailyn (Study Director), Ann Bookman (Study Director), Constance Perin (Study Director), Susan Eaton (Sr. Research Associate), Wendy Jade Hernandez (Research Associate) and Sandra Resnick (Research Associate). I am also grateful to Professors Lotte Bailyn and Tom Kochan of MIT’s Sloan School of Management for their research support. Additional dissertation research support from a fellowship at MIT’s Industrial Performance Center, from the William and Flora Hewlett Foundation, and the Sloan Foundation’s Human Resource Network.

emerged in the 1980s (Resnick 1996). Still, biotechnology is a rapidly growing industry in the US, characterized by mostly small entrepreneurial firms in various states of flux.

The national population of biotechnology firms is about 1300, and they employ 15 million people.⁷ Most firms are concentrated in the Northeast and California. The biotech industry is composed of smaller firms with average size 150 to 300, and a few larger firms of 3000- 5000 employees. Only approximately 1 in 10 firms survive in the end, only 3 in 10 drugs currently return more than their research funding, and there are frequent layoffs. Biotech is characterized by high competition. There were 25 clinical trial failures in 1997, and companies need at least \$300 million in funding to bring a drug to market (Hewitt 1997). These firms have high dependence on financial markets, after often tapping venture capital to start up.

Employers and even ordinary workers are very responsive to stock market cues, news in the industry or with a single trial or experiment, etc. There is a high ratio of professional workers to others (at least 50% and up to 75%, often including 20% or more PhDs: see <http://www.phrma.org> 1997). The firms are remarkably gender-balanced, as professionals are approximately 50% female (DeHaan 1997, Radcliffe 1999). The workforce is relatively young, with the average age in the mid-30s in many firms. The firms themselves are young: a 20-year-old company is considered 'old,' and many firms are 5 or 10 years old. Finally, biotech firms engage in many novel forms of alliances, partnerships, and other collaborative relationships with larger and smaller companies, university colleagues, etc. This increases labor market information and potential job-hopping. In sum, biotechnology employees work in small to medium-sized, highly networked yet highly insecure firms..

B. Study Design

⁷ Three hundred of these 1300 firms are publicly traded; an estimated 700 biotech firms exist in Europe, of which 30 are publicly traded. The total US market capitalization is estimated to be approximately \$80 billion in 1997. (Feder 1997)

I chose a multi-level research method to get at the elusive issue of boundaries and integration. The main research design focused on workplaces and work structures, but I also asked about family spaces and structures, and how they interacted. This helped me understand employees' motivations and performance at work, as well as to see the pressures generated outside work and how they influence the person at work.

I combined qualitative and quantitative techniques in my larger dissertation study (Eaton forthcoming). I conducted intensive comparative case studies in three biotechnology firms in the Massachusetts biopharmaceutical sector, surveyed employees at these firms and four others, and interviewed at three additional firms, for a total of ten. The firms were not randomly selected, because of difficulty in gaining access in a highly secretive industry. So, there may be some selection bias toward those who were willing to participate in research. The firms varied in size, status of affiliation with a larger company, and the nature of their production (whether of knowledge alone or actual physical product). The study design controlled for state regulatory climate, industrial sub-sector (biopharmaceuticals), and mix of occupations and education in employees. The sample of firms where I conducted the survey included 7 of 8 firms asked to participate. This paper focuses on the survey results. All names have been altered to protect confidentiality.

C. Research Methods:

I interviewed employees, observed work, and collected survey results over a period of 24 months in 1997 to 1999 in this study. By the end of this period, one of the case study firms did not exist in its original form – it had merged with another company

and taken a new name, shedding half the employees of both companies in the process. But that too is part of the new reality I hope to illuminate.⁸

I interviewed some 60 scientists, technical workers, and production workers at work during the study. I also conducted work place observations at all the work sites, in labs, offices, and meetings, at varying times of day and year.⁹ Retention of scientists and technicians is a major goal in this industry, in which turnover is expensive and can even contribute to stock market losses as investors take departures as signs of trouble.

I surveyed 1,047 research, development, and production employees in seven firms. I received 461 usable responses, for a response rate of 44%. My major data in this paper are drawn from the surveys, though I use the interviews to add qualitative commentary that illuminates survey findings.

The family and personal characteristics of the 461 responding employees are listed in **Table 1**. The sample is 56% female, and includes employees from 7 firms. More than 80% have at least a college degree, with 16% having a Ph.D. and 20% with a master's degree. Men are more likely to be managers and women more likely in this sample to be scientists. Nearly all again are full-time; only 14 women work part-time. The lengths of service are shorter (4.7 years) in this sample, and women are slightly younger on average than men (35 vs. 37). Otherwise the striking thing is that again, 71% are married and most of them are two-career families. Men are more likely (55%) to have children than women (45%), which probably has to do with perceived career penalties for having children (based on my other research; see Eaton forthcoming 2000) as well as deferred child-bearing. The respondents were similar to the non-respondents in gender and occupational status, as well as marital status, with the exception of representing slightly more women (56% not 50%) and in one company, more managers

⁸ I am grateful to unpublished research kindly provided to me by Sandra Resnick (Radcliffe Public Policy Institute Research Associate) for the biotech industry. (Resnick 1996, 1997)

⁹ To limit selection bias in the interview study, I interviewed a sample of ten employees who left three studied firms during the period of the study, to see why they left and what their next jobs were

and professionals (60% not 40%) at the expense of technicians. More detail about the methodology can be found in Eaton (forthcoming).

What do Employees Want?

“The industry stability is not critical to me... I want challenging work, a new skill or a new way to use my skills...”

A female biotechnology employee in her 30s

"I lived through the bankruptcy, so I would like a secure financial situation. If you worked for a start up you would want to know there was enough money to give security for a few years. There is no such thing as a secure job.... My father was a mailman, my mother worked for State Farm insurance, and I think all our parents had a secure job, and retired from a secure job. It is really different now..

A male biotechnology employee in his 40s

What evidence is there of a “new social contract” among the biotech employees? How does it relate, if it does, to the organization of work? Scientists came to biotech in the first place for two main reasons. Intrinsic motivation, including the exploratory nature and interesting structure of the scientific work, seems to substitute in some way for a lack of financial and employment security. Women in particular had experienced “pushes” out of academe, but men did as well. Both experienced “pulls” from the industry for financial reasons and the attraction of working in a small firm where one’s contribution seems to make a visible difference.

My survey evidence shows that what was rated most important to both men and women in their biotech careers is the “chance to learn new things at work.” This is not completely unexpected in a professional context, but it is unusual that it is first. Next most important was “good relations with coworkers,” at 4.5 out of 5 possible points. For

women, flexibility in working hours came in third, though for men this came in seventh of nine. For men, third most important was promotions. Men were more concerned about higher pay (fourth) and women slightly more concerned about job security (fourth). Job autonomy, time for non-work activities, and a chance to contribute to society all came in as somewhat lower priorities.

Once they are employed in the biotech industry, what keeps people there? For almost half the scientists, whatever their initial reason for entering biotechnology firms, the interesting work of science itself keeps them employed in the industry. For a little more than half the scientists, the chance for advancement or promotion seems to be a primary reason they stay where they are. Some, particularly the women, said that they valued a “collaborative” or “good working environment” as much as anything else. For a sub-group of female scientists, family concerns and the flexibility offered in their company kept them there. These were mostly people working non-standard schedules. This resonates with other studies on work-family flexibility at small companies (MacDermid and Williams 1997, for example).

For one-third of the surveyed workers, their current job was their first in the biotech industry, for another one-third, it was their second, and 20% had had two previous biotech jobs. Their high expectations of promotion were not unrealistic. I found strong evidence of some form of internal labor markets in these companies, despite their non-traditional nature. Only 1/3 of employees still had the same job title they arrived with, and fully two-thirds had been promoted in the company. More than half of this two-thirds had been promoted again. The mean length of service for survey respondents was 4.6 years. Promotions usually meant a salary increase, sometimes a new job title, and only about half the time increased responsibilities. Other types of compensation (such as stock options or bonuses) came in only a quarter of all promotions. Promotions typically meant rising from a Scientist to a Senior Scientist, or a Scientist II, etc., or sometimes into management roles, though nearly all scientists

supervised technicians. Some Research Associates had been promoted to Scientists at the lower levels, even without a Ph.D. or Master's degree.

These mobility patterns suggest that internal labor markets, in whatever modified form (see Doeringer and Piore 1985 for the classic definition), are alive and well in these small firms, even with limited room for mobility at the top. (To the extent that senior scientific staff stay in place in small companies, few directorships open up.) While advancement does not follow a single track, or a single set of job titles, or even a predictable degree-based order, promotion still occurs for the majority of employees. This finding is somewhat surprising in the insecure environments of the biopharmaceutical companies, but perhaps not so surprising when we realize that promotions are one of the few means to reward employees in this setting. Giving them bonuses is difficult in tight financial times (always), giving them stock options is of limited value if the stock is hovering at a low value (as it has in both firms), and interesting or luxurious travel and time off are both limited by the rigorous time requirements of the work.

Uncertainty and Its Role in the Employment/ Social Contract

The uncertainty that is rampant in the industry is hard for almost all employees, and they have developed a complex set of strategies to deal with it. One woman Ph.D. scientist in a small company said, "I found it [uncertainty] hard to deal with. I used to obsess about it, and really worry a lot. Then I got over it. You will always have that as a concern, so you can't let it make you crazy. No matter what, the job is always potentially going to go away. I had to get over it, or drive myself crazy."¹⁰

¹⁰ Note: I as the interviewer was not totally persuaded that she had "gotten over it," but felt she was trying to convince me as well as herself!

In recent years, many employers have laid off employees regardless of the fact that they are making money, even such staunch and previously loyal employers as Xerox, American Express, and IBM. Paul Osterman discovered that more and more employers were laying off employees for reasons having to do with “increasing competitiveness” rather than either season slowdowns or business problems (Osterman 1999).¹¹

One male biotech Ph.D. scientist in a small firm, a new father in his forties, told me he "worries about keeping my job. I have looked around informally, and there are not a lot of them out there. Any company could go up or down. If all the trials go well, this company should be in good shape. But I have seen a lot of people laid off. One was someone who worked for me, and that was hard. There were some dark days..."

Some scientists saw a direct trade-off in security between working for big and small companies. Roger, a Ph.D. immunologist, said, “It’s more fun and exciting to work in a small firm, there are more opportunities to work on different projects at the same time. But you lose some security. The basic benefits are standard, but big companies have more. Smaller companies have bonus programs so they may offset a lower salary.” What about stock options, which are supposed to increase ties to one’s firm? Roger said, “Stock options are not worth a lot... you can't count on them.” Lester, another Ph.D. scientist, agreed, when asked about the uncertainty of his firm, "I do not anticipate it continuing. Once you realize there is 'no security, there is only good news after that. I am pretty realistic. Things change. Companies die. Biotech is not secure. If you think so, you will be disappointed...You have to resign yourself, you will be out of a job at some point.” Roger agreed. “You will be looking. The odds are that things will not go well. Look at the next building over-- It used to be Firm Q [with 45 or 50 people], now there are 5 employees there.”

¹¹ This specific conclusion is based in part on a data set collected by the author for Professor Paul Osterman, comparing notices of layoffs in the Wall Street Journal in 1993-4 with notices in 1972-3. The evidence shows that far more firms are laying off employees permanently not due to financial problems.

Employees also seemed to feel loyalty to their co-workers, as much as to the firm. Some stay attached to their firms through their 401-K funds, if they have ties to the old workforce. One biotech HR director explained, “there are lots of long term relationships here. We always have a send off party when people leave. Then people come back for lunch, weddings, that kind of thing. Their relationships with their co-workers are strong. Then, they stay in touch with the company because of the 401(K) plan. If they have more than \$5000 in it, it can stay in their plan forever. And right now, I have twice as many people in it than are currently contributing! It’s a kind of attachment. We use [XYZ] investment management, and people can roll their account over into an IRA, and keep the same fund. The company acts as a kind of gatekeeper for that.”

He actually found hiring people into an uncertain future difficult. In fact, he mentioned he himself was keeping his eyes open for new opportunities. “It’s hard to attract and retain people,” he said, “in my official capacity. We don’t know when we will be ‘on the market.’ [*There were rumors of a potential pending sale.*] At the same time it’s hard to think about leaving. In my informal role, people leaving is a personal loss, not just as an HR person.”

One manager says, “Everyone has worked out a way to deal with the uncertainty, internally-- which is not to say that it is easy, just that everyone has thought about the issue and has either focused on what they can control (in some cases the science) or decided not to worry about it. On the other hand, people also see uncertainty in other environments out there-- both academe, with grants being harder to get and also tenure. And also in big pharmaceutical companies, which may appear more stable but which also terminate projects and divisions.” So job security was not assumed, but most people had come to peace with it, to some extent.

The Importance of Control

“You have more respect if everyone does the best job, no matter how hard it is. There are so many things you have no control of, the market, the science, the perception of the product, the competition, the Congress changes stock prices, the investor is a crook... so you do the best job you can...”

A male Ph.D. Scientist in a small firm.

The security issues for biotech professionals were definitely tied in with “control” issues. The scientists needed to feel in control of something, at least their own work and their science. “ Well, hopefully we will make [Firm G].... the one,” said Lester. “We will work hard. Because I realize that if I can't help, then I will just be going through the motions. You have to balance both, working hard and being confident you are doing a good job, and being realistic about what you have no control over. But you want to be confident you did the best job you could... Of course there is no total freedom in academe either.” Scientists often compared their jobs to alternative jobs, such as academic jobs.

They also talked about the choices others had made. One manager described how he had moved up, at least in part because several people above him left the firm. “The leavings were unplanned. Andrew was the senior VP. He left for personal reasons. The other two left from insecurity. They had no plan to downsize but they felt uncomfortable. One is now teaching high school. The medical guy is doing bigger clinical trials at another company.”

It seems that people who stay in a small company develop rationales for staying there. In one focus group with top scientists and managers, Lotte Bailyn and I asked what they thought about people who had left, and what kind of a factor uncertainty was in their decisions to leave. Chester, an important innovator in the company, jumped in right away. “It does play a role,” he said. “But they might not say so if you asked them.” Another person said that they might go to another biotech company, which is bigger or

they think is more stable, and find out there are just as many problems there. Here an officer of the small company pointed out that the big ones could “crash” too, with some satisfaction. Patricia, the HR director, said, “Stability? you create your own.” Chester agreed: “Stability? it’s not in the vocabulary.” He went on to explain that in the society at large, it does not seem to be what people are experiencing. “Nobody promises stability anymore,” he suggested. Someone else gave the example of a colleague who went to work at Johnson and Johnson, and whose whole division was eliminated. Others in the meeting nodded in agreement.

What do employers want? What can they promise?

The HR director at [Firm P], Patricia, said that biotech is considered to have a “high turnover rate,” between “18 and 25 percent per year.” She also said, “some people build their careers by hopping from firm to firm, they may get a little more money at the next one because they have experience, but that is the minority.” And other people leave for “normal reasons,” they “get married and move, or go back to school, things like that.” One VP of a small biotech company, Janice, pointed out that “when a company’s goals change, such as a product going into clinic, and the company is no longer pursuing that line of investigation, some people may leave because they no longer see a career growth possibility there, or because the work that is available does not fit their skill set.” And she said she thought “that might be a very good reason for turnover, a good reason to leave.” Another science director said that “for the last three or four years, we have picked people with flexible skills, not just people we want to use for one or two years and then have leave. The supervisory ladder here is difficult because we are small, and we just don’t have that many people to supervise. So we try to compensate with skills growth. And we try to reward flexibility.” Some respected managers tried to ensure that people were working on multiple projects, both for scheduling facility, for job security for the people, and to increase their breadth of understanding of the company’s work.

Survey Data on Expectations of Long Term Employment

While the popular image of the entrepreneurial professional who is principally concerned about “employability” may be overstated, the evidence remains ambiguous (Swinnerton and Wial 1995; Herzenberg *et al* 1999). Still, a recent Harris poll shows that a majority of all U.S. employees expect to leave their job voluntarily within the next five years, and one in six expects to be fired or laid off (Louis Harris and Associates 1997).²

In a nationally representative survey conducted by the Families and Work Institute, 3500 employees were asked about whether, when they first started working, they had expected to work in one job for most of their life, and also whether they thought employers “in today’s world” could be expected by workers to provide a lifetime job (Bond, Galinsky, and Swanberg 1998). The entire sample split almost evenly into four quadrants as shown below:¹²

¹² Tom Kochan first proposed this division of the data and the descriptions of the two opposite quadrants as the ‘new’ and ‘old’ social contract. Forrest Briscoe, a Ph.D. student at MIT, did the initial data analysis on the larger set, and the later analysis for college-educated persons. See Kochan 1997 (and also memorandum on the social contract, in Blue Print, 1999.)

Expected a lifetime job when began work			
		YES	NO
In today's world, workers should expect a company to provide a lifetime job	YES	“Old” social contract	idealists
	NO	realists	“New” social contract

Note that in the national sample, relatively 25% of the sample each fell into what I am calling the “old social contract,” expecting a lifetime job both personally and socially, and an equivalent 25% fell into the “new social contract” box, meaning that they neither personally nor socially expected long term or lifetime employment options. If the national sample is broken down into only college-educated persons, the percentage in the “new social contract” box expanded to 40%, while the other three boxes fell to 20% each.¹³ In general, education was positively associated with the “new” social contract, and length of service and age were negatively associated with it, and positively with the older expectations.

I asked the same two questions as part of my 12-page, 144-item survey. In the biotech employees' sample, the percentage responding in the “new social contract” pattern was even higher, at 80%. This suggests that the large majority of biotech employees are agreed to something that Thomas Kochan has summarized as the ‘new social contract’ expectation about job security (it is not something one can or wants to

¹³ I am grateful to Forrest Briscoe for performing this analysis. The question was originally asked on a five-point Likert scale from “strongly disagree” to “strongly agree,” and responses have been aggregated to two groups, “agree” or “disagree,” with those neither agreeing or disagreeing dropped out, in all the analyses here.

count on). About 7% remained in each of the other three categories. Some interesting gender differences emerged. Women were significantly more likely than men ($p < .001$) to feel that employers should be expected to provide a lifetime job were; 23% of them agreed with this notion compared to 16% of men. Men were marginally more likely to say that they had personally expected to work a lifetime job, but the figures were small for both men and women (less than 20%), reflecting their relative youth and their limited expectations of long term employment with one employer.

From these figures, I conclude that biotechnology employees I surveyed have virtually no expectations of long-term employment with one employer, and very few ever did. In this they are substantially different from the majority of the American workforce, and even twice as skeptical of this concept as all college-educated employees are. But their expectations seem realistic and well-founded, given the peculiarities of their industry, and their own experience, even if only in one biotech job. Doubtless this is a group that is self-selected for risky behavior, or they would not be working in these settings; nonetheless, the 80% figure is still suprisingly high.

Survey Data on Commitment: Control and Flexibility Matter

To find out whether commitment could be reliably predicted from factors relevant to whatever employment contract remained, I conducted ordinary least squares regression analysis using the survey data. I had asked employees about their commitment to the organization. The dependent variable was defined by a measure of organizational commitment drawn from the work of Mowday *et al* (1979), and very similar to that used by Lincoln and Kalleberg in their classic studies on commitment (1990, 1996). Then I analyzed the responses, controlling for age, gender, education, managerial job level, household income, and having children. I also added measures of whether employees

worked in a small company (since commitment might be lower where job insecurity is higher), and a three-item measure of “control,” meaning whether they had control of the “timing, pace, and place” of their work or not. Finally, I constructed a variable that was the main focus of interest in the dissertation study, “perceived usability” of work-family flexibility practices. I also had measures of formal flexibility practices existing in the companies, and informal practices as per the employees’ accounts. Results are summarized in Table 2, and explained at greater length in Chapter 5 of Eaton (forthcoming).

As **Table 2** shows, organizational commitment in biotech is predicted most strongly initially in this formulation by not working in a small company ($B = .15$, $p < .01$, $R\text{-square} = .05$) and marginally by being an older employee (though not longer-serving). Neither formal nor informal flexibility policies make a measurable difference to organizational commitment as shown here. However, when considering whether employees feel free to use the policies in their day to day work (“perceived usability”), this variable does become significant ($B = .12$, $p < .05$, $R\text{-square} = .06$) and small company size drops out. This suggests that the actual feeling of being able to use policies, and being more in control of one’s schedule, is associated with higher levels of commitment to the firm.

Substantiating this conclusion is that “control” is significant ($B = .14$, $p < .01$, $R\text{-square} = .07$), when it is added to the equation with “perceived usability.” The direct control of the time, place, and pace of work actually seems to be more important than feeling free to use flexible hours, though the two are clearly related. Small company size returns to significance in this equation, and “perceived usability” drops to marginal significance.”

What I conclude from these basic regression results is that the new “employment contract” depends a great deal on whether employees feel in control of their environment, both at an individual work-organization level, and at a level of scheduling their work to

meet their outside needs. Further, working in a highly uncertain environment, such as a small biotech firm, can decrease organizational commitment, generally. It may be that only a small group of “true believers,” as one science director called them, are able to stay for a long time in a small biotech firm that is always on the edge of disappearing. Yet, there are things companies can do that might be associated with increased commitment among employees—not promising them lifetime jobs, or even long-term jobs, but improving the conditions and control of their current day-to-day jobs.

Conclusions

So, what can be said about the kinds of professional employees I have studied here, with respect to the social contract? Interestingly, what we learn seems to be different than has been reported at least in the popular press. In Internet and popular sources, professional employees, especially those working in high tech, are supposed to have little or no attachment to their firms any more.¹⁴ They are possibly working in “boundaryless careers” that spread across locations and companies (Arthur and Rousseau 1996). They are supposedly jumping from job to job, and most concerned about their employability, rather than their current employer. For those whom the firm does want to stay, the employer must offer strong incentives, such as stock options, and performance-based pay. Further, they are networked widely (Powell et al 1996).

Instead, here is what I found. They are staying a fairly long time at a single firm (4.6 years to date in the relatively young firms in the survey, and nearly 7 years in the interview sample on average). They care a great deal for their co-workers and working relationships. And specific arrangements, having to do with a complicated mix of autonomy and control over their work, and flexibility with respect to their family care

¹⁴ There are many sources, but consider the 1999 editions of Fast Company magazine, for one example. This youth-oriented, internet-savvy journal includes stories about job-hunting and relocation and startups in nearly every monthly issue.

concerns, can bind them to the firm far more effectively than stock options, which are often of little value for a long stage of a company's existence. These also seem directly correlated with higher levels of commitment to the organization. Stress in these companies is mainly associated with being female (see Eaton, forthcoming, for more on the gender issues), and with working for a smaller company. Smaller companies tend to be the most insecure. Finally, they are indeed networked, but in both personal and professional ways. They gather a great deal of information through their networks, and also associate them with co-workers, past and present.

Thus, I suggest, the old implicit "employment contract" notion needs rethinking, at least for the professionals participating in this study. Key workplace decisions and developments have implications for family life, and vice versa. Perhaps the old implied contract never did concern employment alone, but career theorists have not clearly identified the interaction between multiple domains that seems to be important. A new conception of jobs is also needed which is more fluid, allowing for change over time. To these scientists, apparently insecure firms may seem secure enough if their own skills are developing, and their ability to maintain and expand professional networks is enhanced. A paradoxical effect of the internal mobility documented here may be that it ties them more closely to the firm, especially those without doctoral or medical degrees. The day to day factors matter most: these factors could include the individual's specific needs, their supervisor, flexibility of coworkers, and the particular kind of project work involved, as well as the firm's policies and practices as experienced by employees.

If jobs are more changeable, then perhaps the employment contract is best not called a "contract" at all, but something else that resembles rather an emergent, fluid set of adaptations, on the part of both employees and employers. This requires a new conception of career, which is more adaptable to different life stages and needs of men and women (and the companies), and more variable than the traditional more linear conception. The watchword for this new concept is "flexibility," both in day to day sta-

tus and work organization questions, and over the longer term. Careers are embedded in a set of inter-firm and extra-firm relationships. Careers are less predictable than might be thought from a human capital perspective (Becker 1964), with degrees sometimes mattering less than who leaves a company at a given time in determining a promotional opportunity. Motivations to pursue science careers in industry rely both on the kind of science involved and on perceived opportunities for advancement. Once they are in biotechnology, employees may mean one thing by “flexibility” (such as the ability to adjust their hours to deal with personal needs and concerns), while employers mean another (such as employees’ being available when and where needed to get the work done). Future research could explore the implications of different interpretations of the concept of “flexibility.”

I conclude that social contract is social in the sense of being experienced within the workplace, among coworkers. It is a contract, even an implicit one, only to the extent that the employee feels the employer is loyal to them, and sometimes not even with that. Insecurity is a high stress producer. Most people are attached to their workplaces and have made complex arrangements to support their families, arrange commuting and child care, etc. in ways that tie into their current workplace I suggest the concept of a social or employment contract is more like a socially constructed life path, complicated by a series of choices involving not only the individual, but his or her family members, and playing out in the future in a variety of different employment settings with more flexible “understandings.” Whether such understandings will be mutual or not is a question for another paper.

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