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ABSTRACT Are professors happy? Results from surveys generally conclude that they are, much like other professionals. But high satisfaction registered in surveys may measure the normatively-generated, public side of work that affirms the academic profession’s official image. Based on a recent national study of academic physicists’ careers, this paper presents results from in-depth interviews in which respondents at a range of US universities provided detailed accounts of their experience in, and identification with, academia. I study satisfaction from a different angle – through the self-doubts scientists have about their work and careers – and investigate how self-doubts may systematically differ across distinct ‘social worlds’ of the academy. The findings suggest that satisfaction is a more nuanced component of work than previous studies have suggested. I explore satisfaction as a developmental process in which people learn how to narrate their careers in the socially accepted formats that their given world of academic work prescribes.

Keywords academic careers, higher education

Scientists and Satisfaction

Joseph C. Hermanowicz

Academic science – and the academic profession more generally – has consistently held forth among the upper reaches of the occupational prestige hierarchy (Hodge, Siegel & Rossi, 1964). Like other professions, science has commanded this prestige despite periodic public unrest over accountability, funding and regulation (Nakao & Treas, 1990). An enduring feature of science and wider academia, enshrined by a potent public reception and despite shortcomings in the public understanding of what professors do (LaFollette, 1990; Wynne, 1995), is its appeal as a way of life, a bastion of autonomy and free inquiry. Popular imagery has long cast the professions into a class of their own, both because of a socially assigned value on the expert knowledge that professionals possess, and because of the sheer esteem that flows from these privileged positions in the occupational structure. In one sense, the academic profession crowns all others: its members train and allocate the people of all professions. Whether it is through prestige, imagery, or some other social force, society affirms the grounds for satisfaction in science. But how happy are the people whose profession commands this lofty standing?

This paper proceeds through the following parts: first, I provide a rationale for studying satisfaction by documenting major trends found in previous research. Second, I describe the design and methods used for the
present study. Third, I explore scientists’ satisfaction with their careers as manifest in three distinct social worlds of academic science: the world of élites, of pluralists, and of communitarians. I discuss the different bases for satisfaction within these groups, and assess how they are similar and different from one another. Finally, I conclude by highlighting the processual way in which satisfaction is obtained in each of the three worlds.

Background

Surveys — the customary method to date for studying job satisfaction among scientists (as among all academics) — have typically drawn two conclusions: (1) scientists are highly satisfied; and (2) this pattern holds generally across sectors of the higher education system, from community colleges to élite research universities (Blackburn & Lawrence, 1995; Clark, 1987; National Center for Education Statistics, 1990). The latest survey, conducted by the National Opinion Research Center and based on a sample of over 1,500 full-time faculty members at four- and two-year institutions, concluded that 90% of the faculty surveyed were satisfied with their career choices and would probably make the same decisions again (National Opinion Research Center, 2000).

Burton Clark’s (1987) comprehensive study of the academic profession offers among the closest considerations of its practitioners’ satisfactions and discontents. In surveys, Clark found that academics across the board generally report that they would choose teaching if they were to start all over again, do not feel ‘trapped’ in their line of work, and like the institutions that employ them (Clark, 1987: 218–20). In interviews, he found that academics air frustrations about their relatively low pay, and about students whom they increasingly find ill-prepared (ibid.: 218–25). Despite a focus on the profession’s internal variety, Clark found relative uniformity in satisfaction among academics working in various types of schools and fields.

However, Clark notes that there has been much to frustrate academics over the past two decades that would seemingly contradict self-reports of high satisfaction: salaries have not kept pace with inflation, teaching loads have stiffened, research budgets have shrunk. But in Clark’s calculus, these frustrations are offset by intrinsic rewards of academic work. Provocative research by Evans & Laumann (1983) shows that exit rates from professions, including college teaching, science, and engineering, are surprisingly high, challenging the conventional claim that professions entail lifelong commitment to their practice. In principle, high satisfaction would coincide with a profession’s strong holding power over incumbents.

Throughout the survey research that dominates the literature, the academic profession is either treated globally, or no substantial differences are found within its parts. This is surprising, given the different nature of those parts. As one recent study concluded: ‘job satisfaction [in all lines of work] in the United States has remained high over the past two decades. This is the case for men, for women, for blacks, and for whites’ (Firebaugh & Harley, 1995: 95; for comment and critique, see Castillo, 1997). But, as Lincoln and Kalleberg (1990: 25) have observed:

The percentages of the workforce reporting general satisfaction have tended to be so high (around 80%), that many observers, struck by the considerable behavioral evidence to the contrary (e.g., high rates of absenteeism, turnover, militancy) have been skeptical of the validity of such findings.


Much of this work was inspired by Merton’s theory about science’s normative structure (Merton, 1973a [1942]). According to this theory, science (and the academic profession more generally) has an ‘ethos’ consisting of the norms of universalism, communism, disinterestedness, and organized scepticism. Stratification research has stemmed from an interest in the norm of universalism, which stipulates that when a scientist contributes to knowledge (primarily through publication), the science community’s assessment of the merits of the contribution should not be influenced by personal or social attributes of the contributor, and that a scientist should be rewarded in ways commensurate with the measure of the contribution.

This work has made important discoveries about the process of stratification in academe. But it revealed markedly less about the details of ‘what life is like’ on the inside, this despite an emphasis on ‘strata’ or context. The stratification research was almost exclusively quantitative, often seeking statistical models to predict measurable career outcomes such as publication productivity, promotion, and citation rates. In addition, this literature bypassed issues of self and identity as it inheres in people’s work.

The newer line of work in the sociology of science — flowing from the constructivist tradition — takes up not scientific careers, but instead how scientific knowledge is produced within sociocultural constraints and interests (see, for example: Clarke & Fujimura, 1992; Jasnow et al., 1995; Pickering, 1995). Although the constructivist tradition contains many insights and observations on careers, few of those observations address the issues of career satisfaction addressed here. In the present work, on the other hand, contexts are examined, but the focus turns to how those contexts shape experience of the career.
Design and Method

In order to address the gaps found in studies of academe and its practitioners’ job satisfactions, I emphasize three components built into the present analysis: a concern for the personal, undisclosed rather than publicly professed side of work; the use of face-to-face interviews with respondents that allow depth and analysis of finer-grained levels of meaning they assign to work; and inclusion of different higher education institutions that employ respondents, which when combined with the two preceding elements, allows for a more nuanced look at the variations (rather than the uniformities) in satisfaction across the academic profession by calling attention to work context.

I examine satisfaction by focusing on the self-doubts of scientists. By ‘self-doubt’, I refer to the insecurity that scientists feel about their professional status. Empirically, it may exist as voiced anxiety about the extent or level of one’s accomplishment directly related to some or all facets of the academic rôle. Theoretically, it may stem from self-perceived shortfalls in the institutionalized drive for recognition (Merton, 1973a [1942], 1973b [1957], 1973c [1960]). Merton explained that a drive for recognition becomes institutionalized because it facilitates the goals of science – to extend knowledge. Thus, when it occurs, recognition becomes social validation that one’s contributions have served science’s institutional goals.

A focus on self-doubt illuminates people’s uncertainties and/or their perceived professional weaknesses. It strives to bridge views of satisfaction that come by way of people’s publicly proclaimed pleasures and aspirations, which normatively dispose respondents to portray themselves and their work in favourable lights. Self-doubt therefore provides a more rounded look at the academic life and outlines the ways in which the academic profession may be socially differentiated on this dimension.

This work emerged from a larger national study of scientists – physicists specifically (Hermanowicz, 1998) – who work in a variety of US universities that may be classified into three types for comparative purposes: élite – universities that place the highest premium on research (such as Caltech and Harvard) and whose departments of physics are ranked at or near the top of the assessment conducted by the National Research Council (NRC) (Jones, Lindzey & Coggeshall, 1982);\(^2\) pluralist – universities that emphasize research as well as mass teaching and service (most often large state universities such as Colorado and Michigan State) and whose departments of physics are ranked in the middle of the NRC assessment; and communitarian – universities that primarily emphasize teaching and service but not necessarily at the exclusion of research (such as Mississippi and Nevada-Reno) and whose departments of physics are ranked at or near the tail of the NRC assessment.

The terms used to differentiate the institutions in this study are introduced so as not to confuse one for another in the course of describing them. ‘Elite’ (top-ranked schools) uniformly describes the members who work in this world and the external definition of them and their department. It also expresses the aspiration of its members – to be among the best and the key collective goal that brings them together and establishes their membership in universities that are also elite. Some members may have second thoughts on, even strong dislike for, this aspiration as a personal or collective objective, but ultimately it is the sole standard that they unhesitatingly adopt.

A ‘pluralist’ (middle-ranked) university includes some members as eminent as those found at élite institutions, but the pursuit of still more eminence is not what holds members together, nor does it provide a standard that all members unhesitatingly adopt. This type of university answers to considerably more varied demands, including those of mass teaching, as well as research and service to the wider community and state. Given the diversity of audiences to whom this type of university is accountable, pluralist schools need to achieve some balance among staff. Often this results in a blend of people who exhibit radically different affinities, talents and motivations: plurality thus conveys the essence of this university type.

‘Communitarian’ (tail-ranked) schools’ most defensible collective grounds for the actions people take are local, reflecting responsibility to the institution itself. Like pluralists, they answer to many demands – research, teaching, service, administration – but the fundamental basis of comparative worth is within the institution itself. ‘Good citizenship’ is demanded of all, and is a primary basis on which individuals are accorded honour and esteem. All members are expected to shoulder more than one responsibility, and faculty almost never find ways completely to excuse themselves from teaching. Unlike élite and pluralist schools, no special arrangements are made to attract ‘stars’, those people who are known widely by academic and general public audiences. This type of university holds an ethic of shared responsibility.

Top, middle and tail departments were built into the study design to permit comparison of scientific careers that are experienced under different structural and cultural conditions – the prevailing resources and expectations that situate and help define each of these types of schools. Eighty-seven percent of the scientists in the study have worked only at their present institutions; thus changes in career, identity and satisfaction that stem from mobility are small. In other words, low inter-institutional mobility provides a comparatively stable social context in which to assess variation in career satisfaction.

The orientations that people bring to their work are both structurally and culturally constrained. Differences in the social structures of institutions make opportunities more available to some than to others (Crane, 1965; Long, 1978; Long & McGinnis, 1981), a fact that is reflected in scientists’ appraisals of their own successes and failures. People who see themselves ‘at the top’ in one environment may see themselves in the middle or near the bottom in others because the people in those places work according to different performance norms.
The cultural and structural differences among the types of schools further lend to their being portrayed as distinct social worlds (cf. Becker, 1982). Entering each of the worlds — elite, pluralist or communitarian — is much like entering different parts of the world at large. In some respects the worlds resemble one another. In each of them one finds people involved in similar activities, using similar talents. But in other respects the worlds differ systematically from one another. A scientist who subscribes to the expectations of one world would feel like — and be viewed as — an outsider in a world far removed.

The identifying terms — elite, pluralist and communitarian — refer to multiple units: universities, departments and social worlds. In principle, while elite departments can exist within non-elite universities, the status arrangements of the departments and universities in this study coincide (that is, the elite physics departments are in elite universities, and so on). Working with the terms more generally, a university may be considered elite if a majority of its departments are elite, or communitarian if a majority of its departments are communitarian, and so on.

The three social worlds represent points along a continuum of departments and the universities in which they are housed, where elite and communitarian departments occupy the ends and pluralist departments the middle. The departments used in this study represent those found at or near the top, middle and bottom locations on this continuum. Findings from the data and the analysis that follows will describe how the tenor of career accounts and self-doubts differs at these locations, and suggest how they change as one moves in any direction along the continuum — becoming more elite, more communitarian, or more pluralist.

In addition, the study design involved a sampling of scientists of three distinct cohorts, which would permit an assessment of satisfaction among scientists of different ages and hence different lengths and types of experiences in science. The cohorts were defined by those who received their Ph.Ds prior to 1970; those who received their Ph.Ds between 1970 and 1980; and those who received their Ph.Ds after 1980. The use of cohorts permits a more developmental appraisal of satisfaction than traditional survey research has allowed, enabling us to see how careers ‘add up’ for those in generally early, middle and late career stages.

A total of 60 physicists were included in the study. Roughly equal numbers of scientists (around 20) were selected randomly by cohort and institutional type; the institutions themselves were selected for their ability to capture as many scientists as possible to fill the ‘cells’ of the research design. Two schools comprise the elite, one the pluralist, and three the communitarian (which tend to have the smallest departments). A summary of the research design and the distribution of respondents by institution and cohort is presented in Table 1.

Physicists were selected because of the privileged place they have assumed in the history of science. They are regarded as having a kind of genius that sets them apart from ordinary mortals. Physics is taken as society’s science par excellence. It is often said to be society’s oldest science, the most exact, the most mathematical, the most objective — the ‘hardest’ of all the ‘hard’ sciences. Even in the popular mind, physics has a recognizable genealogy of immortals: Copernicus, Einstein, Kepler, Newton, Ptolemy — a secular pantheon, which affirms the heroism involved in carving out a scientific life. A pantheon such as this perpetuates a dream of great accomplishment for those who follow by providing exemplary cases that sustain that dream. Because demigods are part of the direct professional parentage of those who enter the field of physics, the mythification of careers may be especially prominent in this field. Thus if one wants to find out how scientists live with this sort of company and how they perceive their careers unfolding in light of the expectations such company creates, physics is an ideal place to start.

### Self-Doubts and Social Worlds of Science

An encompassing generalization guides the discussion about how scientists experience anxieties toward their work: elite, pluralist and communitarian worlds engender distinct patterns of self-doubt. Individuals encounter a range of career problems that impinge on the ways in which they see and understand themselves. Some of these problems arise more often in one world than in another, given their distinct cultures and structures. Other problems are present in all three worlds.

### Elites

As accounts will show, self-doubts among elites typically revolve around progress. They characteristically doubt their accomplishments, even though high and steady accomplishment is one of their customary features. Indeed, doubts about progress may flow from high and steady accomplishment. The institutionalized drive for recognition appears strongest in this world. Because achievement is morally mandated, scientists appear easily
to find themselves making interpersonal comparisons. Echoing the standards of work found and learned by many in the élite world, an élite scientist explained the pressures underlying doubts that most readily arise in this world:

There are people who just stop publishing and don't do anything to fill the gap.... If you do nothing but your classroom teaching, then no matter how well you do that classroom teaching, you are a failure. If you assume some other responsibility, then you are acceptable. If you don't, then you are essentially ostracized. Most people here continue to be successful right up until retirement. ... You have to publish papers on something in the mainstream journals. And it's absolutely clear what they are. If you show me somebody's publication list for the past five years, just by looking at the journals, I can tell you whether they are active or not.... Physical Review, Physical Review Letters, Journal de Physique, Journal of Physics, and many more.... And if you are not publishing at least three papers a year in those sorts of journals, then you have gone to a halt. [23]3

This phenomenon of constantly striving to achieve, so common and pervasive in the élite world, may be explained by social control. Institutional mandates and group norms compel effort and productivity. Doubts about progress emerge when the achievements of students fail to conform to a moral career (Goffman, 1961) — an ideal — typical image, culturally created, of how a career should go. Any identifiable markers of achievements passed and rates at which these achievements are normatively made. Thus, we find élites asking themselves how well they measure up in any one phase, attempting to locate their progress in social space. Elites are especially prone to ask, 'Am I good enough? Will I succeed? Do I have what it takes? Am I doing as well as I should be? Am I slowing down? Will I keep up the effort?'

[ln] Insecurities ... drive a lot of us ... [insecurity about] how good you are. How well you are doing. Whether you measure up. ... [II] probably shows. It probably shows in my reaction to not getting what I want or need, or think I need professionally. One of my reactions has been to get — not to lose my temper — but to get upset. ... Once I remember I used it to great advantage with a showdown with all my colleagues. [One colleague] said, 'I'm going to do it your way, but I want you to know I'm doing it because you're so upset.' He was sweet, though. He called me up afterwards and said, 'You know, we've got to keep talking, we've got to keep working together, right?' I said, 'Right, don't worry [Fred].' [3]

When careers fall off-track, élites — compared to pluralists and communitarians — are most apt to wonder why, simply because their culture appears to condition them to move onward and upward, as the above accounts convey. The occurrence of a career falling off track did not seem to be common among élites, presumably because social control over achievement is so strong in this world. But when it did occur, decleration or derailment prompted a dire-like introspection, all the more accentuated by the rarity of such occurrences. This self-scrutiny, prompted and structured by élite mores governing progress, achievement and recognition, is

found in the following account, provided by a scientist who slowed down sharply in mid-career.

Life had been very, very, very dry. Life had been physics and going to parties with always the same people who always said the same thing. A lot of people making very, very clever jokes, but no one showing a real interest.... As the years went by, I discovered more and more [non-] physics stuff out there that was of interest to me which I wanted to get mixed in. I did more and more of that and I did less and less physics. And there was a period in the middle of the seventies when I did very little physics. I was still invited to give talks, but the talk was running on gas that had been poured in five years before.... People said, especially in my family and friends, that I changed completely, totally.... My own private feeling is that I fell off the train. Lots of physics happened in the seventies which I didn't know about. [20]

One element is clearly common in all of the above accounts: inter-personal comparison, which gives meaning to careers. Like other scientists, then, élites create their self-identities vis-à-vis others, and all turn to the moral career as their guide.

The evidence above suggests that mandates to achieve induce anxieties about people's very achievements and about the rates at which these are made. This applies to nearly all élites, even those who deliberately decelerated, as illustrated in the last account (and as will be shown further below). Anxieties about progress know few boundaries in age; the young and the old doubt their accomplishments: the ages of the scientists quoted above range from 34 to 67. In spite of how eminent some people become, they are always able to identify someone believed to be better.

'Charlie Hoffman' explains the standards with which he and other scientists work and the anxieties that these standards induce. His account illustrates how someone who deliberately slowed his career experiences doubt about his standing in the field. In spite of distancing himself from institutional goals, he cannot completely escape the control that those goals have over individuals:

People in physics tend to compare themselves to people you can't compare with — Einstein or Gell-Mann or Feynman. In some sense that's the standard and even though it's a ridiculous standard you're always wondering whether you're a good physicist. So certainly I've had doubts about how good a physicist I was, but I don't know any other physicist who hasn't had those doubts. [12]

The following scientist talks about whether he doubts himself:

Yes, daily. Daily. I don't have any doubts about my technical abilities. I have doubts about whether I will have another good idea. Will I ever come up with a new problem? My wife says that — we've known each other for nine years — she says it's perfectly clear: there is a cycle where at the low point I'm just miserable and I can't think what I'm ever going to do, and it may last a couple of days. Then some ideas will come up and other problems will begin to emerge, and then I will rise, and there will be this frenetic activity as things take shape and a paper emerges and concepts
develop and everything builds. Out comes a paper, and then down [I go] again. She says it's absolutely clear, and she doesn't worry anymore because she has seen it and she knows with every trough there will be a peak. At the bottom there is this terrible fear that I will never think of anything ever worth doing, that I've published my last paper. [23]

The imperative to get ahead is felt especially when conditions appear adverse to that goal. Temporary setbacks were often magnified by elites into larger generalizations about the prospects of their longer-term mobility chances.

Nobody has a career which is just uphill. Things don't work out; you get frustrated; nothing seems to be working. The experiments you are doing just aren't [working]; people aren't interested; you aren't getting interesting results; they are not going forward, etc., etc. There are dry periods. You think at those points that you've lost it. You begin to wonder if you are ever going to do anything good again. [1]

Eminence does not necessarily bring security or unchallenged confidence. A Nobelist commented on how the competitiveness of elites, structured by the drive for recognition, often inspires feelings of inadequacy.

If you just look around you, especially in a situation when you are trying to solve a hard problem and aren't making progress, and you see [others] who are successful, very subtle things they can reach -- you have doubts. [16]

Similarly, a woman scientist who has risen to the top of her field commented on the perpetual role that self-doubts play in scientists' lives:

I always have doubts about myself. I'm always plunged into a situation that I feel totally unqualified, unprepared to do, and somehow you have to rise to the occasion. I say two things to myself, and that helps me overcome this awful feeling that I'm not qualified to do x, y, z. One, somebody else thought I was qualified, because otherwise they wouldn't have appointed me to do it; and second, in most cases this is the first time a woman has been asked to do this, and not only do I have to make myself qualified, but I have to do a good job.

What are the specific doubts that enter in?

Oh, that I don't have the background, that I don't have the skills, that I'm not smart enough, all of those things. [14]

Anxieties about progress result in an obsession with time: how 'little' of it there is; and how it is most 'efficiently' spent. Elites usually go to great lengths in guarding time (cf. Hochschild, 1997; Nippert-Eng, 1996). They commonly hold 'office hours' -- times at which they allow themselves to be seen and heard. Their visiting hours are normally set only at scheduled intervals during the week or exclusively by appointment. They seem to discourage random interruption, informal dialogue and idle chitchat. They are intent on getting down to business.

A scientist conveyed common sentiments about time and how this usage is viewed in conjunction with one's hoped-for progress:

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Hermanowicz: Scientists and Satisfaction

What would you like to be better at?

Better at being able to use my time more efficiently. If I have something that's in the back of my mind, I can't sit down and figure something else [out] very quickly. I just can't. I just think about that thing on and on while everything else is going to the dogs. I give my students something to work on; they come back; my mind is just not set on those things. And when I finally come to terms with what I was thinking about, then I can reconcile the rest. [It makes me feel] very sick. If you utilize time over several days, you feel very energetic at the end, you feel very healthy. But if you have just gone around in circles the whole day, making no progress, it's only frustration. It's a very sickening feeling. [4]

Psychosocial anxieties about progress, questions about ability, and obsessions with time intensify competition for recognition (Merton, 1973a [1942], 1973b [1957]). Following Merton's theory that links recognition with the institutional goals of science, recognition at the level of the individual validates one's efforts and ultimately the self. More than pluralists and communitarians, elites appear in regular need of reassurance about their self-worth. Often they do not feel sufficiently honoured, in large part because honour appears so central to their self-identities. A closing passage captures these many overarching themes:

I think that there are lots of really super people that don't realize that they are super. There are really excellent physicists who are still neurotic and anxious and worried about their image. And I'd like to put my arm around them and say it's alright, you've done well. I was just in Cambridge a few weeks ago, and I had lunch with a man called —, who is probably one of the two most powerful people in British science. He's the person who rescued my career. He's approaching sixty-five, and we had dinner, and he was regretting the fact that he ... he was expressing the fact that he sees himself as being undervalued. And to me this guy is the god; he's somebody who has clearly made it; he's done beautiful, wonderful things, and he's just an inch away from the Nobel Prize, which he will never get now; but he's done everything else. I think he's marvellous. I adore him. I think he's a really wonderful man. And he was really upset about the fact that people don't cite his work and don't know his papers, and so I would say to him, 'Name a paper'. He'd name one, and I'd say I know that paper: '1956, you did this and this, and that paper now forms the basis for this body of research', and he'd say, 'Oh, I didn't know that'. I could see that he was genuinely cheered by the fact that I knew about his work. So I think what people care about is that their work is appreciated. That's the most important thing. I must admit, every time there is a little message on my answer phone that says [Geoff], will you come and give a colloquium in Vancouver, or [Geoff], will you come and give a talk in San Diego, I think, 'Yes!' One needs those constant prompts that people haven't forgotten you out there, that you are doing alright'. [23]

Communitarians

Communitarians exhibit different self-doubts. Their self-doubts are also somewhat more internally varied than elites', and can be accounted for in terms of four sub-patterns. In the first pattern of communitarians' anxieties, scientists appear at ease with themselves professionally. Self-doubts
about the professional aspects of their lives do not surface as salient issues. The following is an exchange with a communitarian scientist who has been a full professor for 10 years.

What would you like to be better at?

I'd like to be better at tennis.

Has there been a significant time in which you felt things had not really worked out the way you wanted them to?

No. I think they have just about worked out the way I've wanted them to.

Do you have any regrets?

No, I don't think so. I'm a pretty happy guy, actually. I'm pretty pleased with myself. I'm confident about what I do. I have a lot of confidence in what I can do, not just in science and not just in teaching, but in other things too. I told you I wanted to be an architect. After coming here in '74 and buying one house and then moving into it, moving into another one, I started drawing plans for [yet another] house. And so I bought a piece of land outside the city ... and built a house, from scratch.

Have there been times when you feel that you've let yourself down?

You mean done less than I thought I should?

Yes.

No.

... haven't lived up to your own standards or expectations?

No, I always do too much.

Has there been an inner conflict or personal turmoil that you have sought to understand in your life?

I can't think of one. An inner turmoil?

Yes, something of endurance that has been a source of concern.

Endurance.

An enduring source of concern or distraction.

Oh, something that I've carried throughout? I can't think of anything.

[Something] that you've tried to understand or resolve.

I can't think of one. Nothing comes to mind.

Have you ever tried something where you have been doubtful about whether you can do it?

Oh yes, sure. Building that first house was that way. But after building that first house, which was a 3,500-feet under-air, two-storey, English Tudor, then I built another house on the other side of town with another wife. And I built another house that was 4,000 square feet plus 1,400 in four garages. It's a big house. There's no problem with that kind of stuff. Now if I had any regrets, I guess I'd like to be smarter. I'd like to really be more intelligent. I'd like to retain more information. But I guess I'll just take the genes the way they are and do what I can with them. [25]

Doubts about work are not evident. This may be partly explainable by career stage: like many other communitarians beyond the point of tenure, this scientist discusses the sides of himself that extend beyond work. The fact that non-work issues dominate his account, like many other communitarians', suggests that this academic world affords a more leisurely style of life where work is not central, but viewed by the scientists as equally shared with other, sometimes even more important, life domains.

Earlier in the interview, I had asked about 'success' and what it means, and about his visions of the future. His responses underscore the relative harmony that many communitarians achieve in early-to-mid-career. The tone of the narrative emphasizes comfort, rather than strain, in how the scientist sees himself:

Is there some ultimate thing that you would like to achieve or attain?

Yes, I would like to have a house in Cozumel and in Colorado and flip back and forth between the two. In Colorado and Cozumel, Mexico. Have you ever heard of it? It's a great diving spot. The best diving in this part of the world, unless you want to go to Australia.

How do you envision yourself at the end of your career, whenever that may be?

I don't really see any reason to retire right now. I travel all the time. I get to do what I want to do. I go to Europe twice a year to conferences. I go to Colorado three times a year, sometimes four. Usually around Christmas I'll stay for almost two weeks. I'll end up going back there in the summer once or twice. So it's a pretty good deal. I get to do what I want to do and still get ranked number one in the department. [25]

Thus, this first pattern stresses harmony; little psychosocial anxiety is apparent.

Communitarians that fall in the second pattern are also at ease with themselves professionally, but they discuss anxieties that stem from their nonprofessional lives. They may have decelerated, but they have apparently done so without experiencing tremendous social consequences from their academic world. Typically, their research has taken a backseat, as exemplified by the slowing, and sometimes shut-down, of publication evident from their curricula vitae. In the following account, I discuss self-doubt with a scientist who has 'stalled' at the rank of associate professor. In all likelihood he will never be promoted.

What would you like to be better at?

I'd like to be a little better at playing hockey. I can't score goals worth a diddly-squat. I'd like to be able to remember people better, remember names and stuff like that. Really as far as who I am and what I am doing today, I guess there's nothing I would like to be able to do better. I don't have any real strong features or characteristics. I'm not that bright.

Have you had doubts about yourself?

You always have those because you always run up against something ... for example, whenever you grab something and run off with it and say,
I suggest in a sense that I guess everyone and myself in particular are worried about the significance of what one is doing and what's the point of doing what I'm doing: is there a point? If one is making 'good progress', then you get affirmed by what everyone else thinks of your work, and so that validates it in some sense. I don't get quite the feedback that other people would perhaps get. So that has in fact led me to wonder, is this the kind of thing that I should be doing? Maybe I should be off taking out the garbage or something, you know. I teach the course, and I try to give as much as I can there. So I feel like I earn my living. I don't think I'm overpaid. The State of —— gets more than their money's worth from me, I think. I'm not ripping anyone off. It seems like what I'm doing is an honorable thing, trying to find out what I can about nature, whatever that's worth. It may not mean anything, but what else can I do? [31]

The fourth and final pattern is evident among those communitarians who have 'miniature versions' of elite careers in terms of both publication productivity and in how they narrate their careers. In predictable ways, such scientists often experience 'elite self-doubts' — those about professional and professional accomplishment. The scientist quoted below discusses an enduring anxiety about success and failure. Paralleling the accounts of élites, his account highlights the persistent notion of a ladder. He is not content with equalizing on commitment when security in age has allowed him to do so — as was typically found in most communitarians, as highlighted above. He is worried about how far he has gone and about his pace. Above all, he has deep-rooted doubts about whether he has done as well as he had hoped.

What major doubts have you had about yourself?
There was always a doubt about whether I would succeed, either personally or professionally.

Have you ever thought you had failed?
If I look back, there are certainly times when I could have done better either personally or professionally. When I became a tenured full professor I could have stopped doing my research at that point and taught. I always considered research a part of what I wanted to do. To be successful in my mind, you have to do research, so there was a drive to be successful. But I think it's just one of my characteristics that when I see something that needs to be done, either professionally or otherwise, I tend to get right on it. I don't say, 'Maybe I'll do it tomorrow', or 'I can always wait to the next day'. And I think that's probably served me well in my career, because it's so easy to lay things aside and do other things at hand. It's so easy to spend all your energies teaching and not put in any extra effort to keep your research programme going. So this aspect of being driven has probably served me well.

Where do you think that comes from?
I suspect I had some fear of being a failure in life. I came from a poor family, an uneducated family. I always felt out of my element in the society in which I found myself, and so there was this fear of failure and looking back at each stage, I felt that I wouldn't succeed. I wouldn't succeed in getting a PhD; I wouldn't succeed in getting this research done. And I think that has accounted for my driving myself hard.
In the following accounts, notice how the scientists appear at ease professionally. They convey a sense of feeling unpressured, comfortable and generally happy. There is very little sense of angst, turmoil or doubt about how these scientists see themselves in relation to their work. Both scientists are senior full professors.

What doubts have you had about yourself?

Not a whole lot. I think most of my doubts over the years were in the early part of my career where I wasn’t always sure I was really smart enough to have a research career, and I’ve had one. And in other areas I haven’t really had significant doubts. [49]

What doubts have you had about yourself?

I see my failings, and they are a source not of deep depression but some days you feel more depressed than others, but by and large I’m a cheerful sort of person.

What are the failings that you see?

Not as diligent as I could be in my work as a physicist. In domestic responsibilities, not as willing perhaps to take additional jobs. It relates to responsibilities, all of these. I’m certainly more comfortable with myself now than I have been as a younger person: A, because I carry these things out a little better and I’m a little more responsible, and B, because it doesn’t bother me as much if I’m not. It doesn’t seem to matter quite as much as you get older. I wouldn’t want to go back. I’m quite comfortable where I am. [51]

In contrast to these scientists, other pluralists exhibit elite-like doubts and anxieties. There is a sense of pressure to perform and to keep performing, underscoring once again the idea of a continual ladder to climb:

You have doubts all the time in the sense that you have to keep up to be a professional physicist. You have to produce. It’s like being an artist. If you don’t produce stuff, you don’t receive any grants and your stock just goes down. You go through bad spells where you’re not succeeding; things go wrong; it’s your fault. You made a bad decision. Your design for the apparatus was lousy, things like that. [53]

I think a fear that everybody in this field lives with is that you’re going to stop having ideas sometime. You become good at something there is enough data there that you can keep re-analysing. The danger comes, or the fear that most scientists have to overcome is that you have to get over the fear of trying something new. You have to take risks. You have to be willing to stick your neck out. A fear that I have is that I’ll get complacent. I don’t want that to happen. I’d like to be able to maintain a happy balance between being a senior citizen or a relatively mature scientist at a young age, but I don’t want it to come at the expense that I just write review articles for encyclopedias or for major journals all the time.

Have you felt that you have had to try to overcome personal weaknesses or insecurities?

Yes, it’s always been a struggle for me to make myself keep working. That’s what the big battle is all the time. You have to be self-motivated. You have
to find something that makes you want to work fifteen hours a day, six days a week or more for very little pay and for very little chance of success, and that’s difficult sometimes. I think I’ve been successful at it, but it’s not something that comes easily. [46]

Risk-taking, overcoming fears of trying something new, producing, getting grants – this is representative language of the elite found in a pluralist, who in turn stands in contrast to the scientist quoted before him, seemingly at ease professionally. That they, like others like them, inhabit the same academic world lends to their pluralistic portrayal.

The scientist quoted below discusses his self-doubts and the competitive contexts in which those self-doubts are most evident. Especially remarkable about this account is the physicist’s ability to see in himself – and to articulate – doubts that he appears to have carried over several phases of his life. He traces his doubts to family influences, and he speaks both as a budding physicist and as a son whose father is an eminent social scientist at a major research institution.

What doubts do you have about yourself?

Capability. Scientific capability. I have a lot of doubts. It’s part of my personality. That’s always been a part of my personality.

Where do you think this came from?

Oh, I know a lot of it is that my father has a lot of the same traits. It comes from your environment.

In what ways did your father express these characteristics?

Doubling the worthiness of his work. He was an academic also. Feeling he wasn’t working hard enough and not getting enough accomplished, even while many people around him were giving him strong affirmation . . . My family academically was always very high achieving. Both of my parents have PhDs, and my two oldest sisters got straight A’s and always did very well. So that was expected. And I was the youngest, and I just felt from my parents that when I did do something very good academically – the best in the class or whatever – their attitude was ‘that’s nice. I [infer] now that my reaction was ‘that’s not good enough’ . . . ‘If I’m only best in my class, I should be best in the state’. I’ve had episodes of depression going through my career, especially at major turning points, like going from graduate school to postdoc, and then finishing my postdoc and finding a permanent position. Both of those times I had fairly major episodes where I was pretty depressed about my role in physics and what I was going to accomplish.

Can you elaborate on what the source of the depression was?

Uncertainty. Self-doubt. I think the good quality that I do have is perseverance. I didn’t give up. Also I think I tend to think less well of how I performed. Other people think better of how I performed than I do. My own view of myself is lower than other people’s view of me. . . . I guess there was this big fear of what happens if you reach a stage where you don’t do well, you’re not at the top of the class. That was unexplored territory for me, and so it [made me] very nervous to think about that. As you get higher and higher into professions, it’s harder and harder and harder to stay at the top. I guess the biggest thing that I wish had been
done differently is to have a sense of security so that if you're not at the

In direct ways, this scientist states the substance of self-doubt, its form
class characteristic of élites. What does he doubt? The worthiness of his work,
level and rate of accomplishment, whether or not he will be successful at
the level to which he aspires. Yet this is not an individually manufactured
level, nor should the doubts about reaching it be viewed as strictly
individually rooted: the aspirations and the doubts are produced by a wider

The data have allowed us to see how self-doubts differ among aca-
demic worlds. In the élite world, self-doubts are centered on work. In the
communitarian world, self-doubts are centered on issues outside of work,
to the degree they exist. Only a marginal number remark on doubts
associated with work and their performance of it. Often scientists in this
world appear at ease professionally. In the pluralist world, self-doubts
themselves constitute a plurality; it is here where we see a blend of élite-
communitarian types.

I have offered a social control explanation for the variation in patterns
observed. The academic worlds are partly constituted by different perform-
ance norms, specifically norms about how members locally define success
and failure in their professional roles. The élite world mandates work
achievement throughout the career. This is why we are apt to see scientists
in this world doubting their achievements in early, middle, and late career,
and thus also why we see even highly accomplished scientists doubting
their worthiness: the constant press for recognition always leaves room for
something more and better to achieve.

The intensity of work doubts found among élites may be reinforced by

collegial networks, contextual effects remain: a network comes into fruition
because of a drive, which may be individual in expression but not in origin.

Norms governing success and failure appear less stringent in the
communitarian world; this appears to produce less stringency in how
individual communitarians come to experience, view and narrate their
careers. The call to achieve and to keep achieving is not as strong, in large
part because it is not locally enforceable. Predominant careers underscore
a relaxation of scientific drive, particularly when jobs become secure. The
comparative lack of press for professional recognition in this world in effect
frees scientists to talk about doubts rooted in life outside of work. The
comparative lack of professional press likely also enables communitarians
to devote more time to non-work lives. By sheer function of time, this
would create more opportunities for doubts to arise in what scientists do as
non-scientists.

Social control in the pluralist world seems not as strong overall as that
found among élites, nor as weak overall as that found among commu-

Overall Satisfaction

In light of how self-doubt surfaces in different ways in the élite, pluralist
and communitarian worlds, we can now suggest how overall satisfaction
might be characterized for each group. In terms of peak experiences, élites
are in a position to feel more professional 'highs'. Opportunities for
advancement and intellectual challenge are more plentiful. But at the same
time, as accounts have conveyed, there is an insistence in élite culture to
continually build upon past successes. Although opportunities for advance-
ment are plentiful, so are opportunities for doubt about progress, which
have appear to leave most élites in a perpetual state of never feeling fully
satisfied. Thus, while élites are positioned to experience the most overall
'highs', they are also apt to experience periodic, deep 'lows' because of
unrelenting institutional demands for high performance, and the human
ability always to meet them.

Conversely, communitarians are susceptible to experiencing the most
overall professional 'lows' in the absence of available 'highs' afforded by the
institutions in which they work. This, however, seems to depend on the
extent to which (and speed with which) individuals adapt when opportuni-
ties fall short of expectations. Goffman (1952) developed the concept of
cooling-out, which refers to individuals' realignment of expectations with
opportunities and ability for success. All scientists 'cool-out' as part of their
ageing. With communitarians, however, cooling-out seems the most difficult to accomplish among people starting their careers with high research aspirations, which ordinarily cannot be satisfied in the communitarian world, as evidenced in the interviews. This process is prone to leave such communitarians with a negative and cynical residue. The starker changes in outlook on self and career are seen in communitarians. These patterns are further evident in the representative accounts below:

I had a pretty good idea what I wanted to be doing twenty years down the road, ten years down the road. I was envisioning developing a relatively strong working group. If I could bring in people who could support me and what I was trying to do, and I could interact with them, we could have a pretty good working group in, say, astrophysics, stellar evolution, or in nuclear astrophysics. Initially it looked very promising, [but it never came to pass]. So my aspirations were blunted at a relatively early stage. Within the first five or six years I could see that nothing was going to be kept. I wanted to be doing research, I really wanted the research to work extremely well, as most researchers do. I would say that my aspirations haven’t been fulfilled at all. To that degree it’s been very unsatisfactory in my mind. It’s been very unrewarding. My professional development has been somewhat thwarted. I’m not doing today what I had expected I would be doing. And so you come to release those kinds of fantasies and deal with reality and take what’s given to you. You make the very best you can out of it. [27]

I thought I could maybe make some nice discoveries, but I had realized early on that the probability of making a major discovery like Einstein or Newton, those kinds of major discoveries, would probably be completely out of my grasp, reality being what it is. But I thought maybe with some luck (a lot of interesting results come out of just pure luck), [I could], if I stumble around and find something that hasn’t been observed before: . . . I realize that’s not going to be possible for me to do, to accomplish much more than I already have, considering the rate at which I’ve made progress. Over the time that I’ve got left to do productive work, the changes are I won’t really make any major or even minor discoveries. I think that if one has limited talents, then you are going to make rather limited contributions. I think now that my contributions will be rather limited. I can look back and see what opportunities slipped through my fingers. [30]

Cooling-out comes to light by the language communitarians themselves use; the intensity of this language is unique to this world. The prominence of this process in the communitarian world, and the grip that it places on its members, is underscored by noting that the two scientists above are aged 56 and 39. Even after having led their careers for many years, the experience of the cooling process remains, if not prominent in their day-to-day lives, then readily recalled. Those communitarians who appear happiest are those who have embraced teaching, either from the very beginning of their careers or in midstream as a result of reordering their aspirations. Such testimony is provided by the following scientist, representative of this form of adaptation.

My aspirations were to be a faculty member that primarily engaged in teaching with some research on the side. By and large that has happened.

Hermanowicz: Scientists and Satisfaction

That was my hope. I didn’t hope to be at a large school, for that matter a PhD-granting school. I would have been happy at a bachelor’s-degree school . . . I am very, very happy. I think that I have been able to function primarily in a teaching role. I am not a big researcher. I am able to do some of the type of stuff that I like dabbling around with, and it’s not stuff that’s going to be in Physics Review Letters [sic] or anything like that because it’s not breaking news . . . I’ve been able to teach and do my little things. [39]

Pluralists represent a middle ground. They operate in a world that allows them to ‘spread their bets’ professionally and personally: pluralists have the opportunity to achieve like elites, but if that fails or if their interest wanes, they can adopt the communitarian model. The data have suggested that pluralists can approximate elites, can even become elites in a pluralist world, but this is not mandated. By the same token a pluralist, like a communitarian, can embrace teaching, levelling off in research at midcareer, without suffering stigma. Professional activities and commitments may be embraced to a degree, sometimes to a high degree, but not necessarily at the expense of family and leisure. Based on the data, it seems reasonable to generalize that life in the pluralist world does not hinge on one thing alone; thus, pluralists seem better able to maintain a balanced style of life than either elites or communitarians (to the extent where ‘balance’ is a held goal).

Conclusion

Based on the careers of people described in this paper, one can draw two sets of conclusions about how satisfaction operates sociologically within academic science.

First, self-doubts inform our understanding of the social worlds of academe. The academic worlds set self-doubts apart in systematically different ways. Self-doubts connected to work are most apparent among elites, who doubt progress, standing and status. Such self-doubts are apparent but less pervasive among pluralists and are apparent only in anomalous communitarians. In objective terms, therefore, the further ‘up’ one goes in the institutional hierarchy moving toward the elite end of the continuum the more one finds individuals with the same anxieties: doubts tied to work get more common and more intense among higher status people. The elite world appears to induce self-doubts in individuals because of the competitiveness over recognition that permeates this environment. Thus, conceptualizing the profession in terms of social worlds that are differentiated psychologically enables us more effectively to understand the logic of satisfaction obtaining in any one of its ecological regions.

Second, the use of interviews (and particularly the emphasis on retrospectively- and prospectively-grounded career narratives) has allowed us to look at satisfaction in a more developmental frame. That is, the type of data have allowed us to see how people themselves arrive at a sense of self-understanding that is not fixed in time, but rather accounts for the courses they have travelled, in the work contexts where those travels have
been socially situated. This is a significant advantage, since satisfaction, as it is known to people who experience it, is a fluid aspect of work that is responsive to trajectories, turning points and contingencies of a career.

This work suggests that social worlds of academic science induce three general ways of constructing and narrating a career – elite, pluralist or communitarian. Each of these worlds imposes on its members a template of how the typical career should look, and how that typical career should sound. As gleaned from the accounts, people in these worlds ‘cool-out’ in systematically different ways. The style of narrating the career – including how successes and failures are experienced and interpreted – appears not to come by chance; it results from learning and imitating the standard formats that at once characterize and prescribe a way of life in any one of these organizational environments. Being a senior elite and a senior communitarian means two very different things, entailing two (prototypically) different kinds of careers. Knowing how to narrate each one, including the ability to tell how and why one is satisfied and/or full of doubt, is the result of a group effort, responsive to group norms, attitudes and values. In looking into these social worlds, we are therefore able to ascertain not only the competing bases for satisfaction, but also how satisfaction is variously managed and manufactured over time by each of these groups. As McAdams (1993: 30–31) has observed, ‘Human time is a storied affair’. We learn how to act and live through stories. This work has attempted to show how ‘career stories’ are socially bounded and generated by a group composing a work environment. Knowing ‘how to be’ and ‘who one is’ in any one academic world appears to be a feat accomplished over time and with others who are also presenting versions of a socially-shared script.

While the evidence strongly outlines three predominant career patterns between each of the academic worlds, a portion of the data also has revealed variation within the worlds. It is sociologically reasonable to expect individuals to conform to group performance norms and patterns of professional life, thus establishing between-world differences. Previous empirical research has consistently borne out this observation. As Scott Long and Robert McGinnis have stated (1981: 422): ‘Once employment is obtained in a specific context, individual levels of productivity soon conform to characteristics of that context’. The present work shows that, to a high degree, the ways careers come to ‘sound’, ‘get narrated’ and interpreted, also appear to conform to local standards, producing distinct scripts between the worlds.

It is also sociologically reasonable to expect some individuals to deviate from local patterns because it would be unreasonable to expect complete uniformity in any social group. A world of no variation, whether a world of scientists or of elite restaurateurs, is, of course, a world of make believe. What we have then, are three general patterns of career experience and meaning-making, along with some identifiable sub-patterns in each of the three settings. Some elites may slow down, and come to look more like elite pluralists or select communitarians. Some communitarians may speed-up, and come to look more like pluralists or select elites. Some pluralists also, when they substantially speed-up or substantially slow down, may deviate from their locally modal pattern and come to resemble extremes at either one of the elite-communitarian polarities. Thus, while individuals assume their identity as a member of the elite, pluralist or communitarian world by virtue of their location in the institution of science, their own performance patterns and ways of narrating their careers can permit that identity, so that, in a small minority of cases, we can see and speak about an ‘elite communitarian’, a ‘communitarian elite’, or an ‘elite pluralist’, among the other possibilities. This means of conceptualizing the profession of academic science and the attendant patterns of satisfaction strives to move us along toward a more nuanced picture of occupational life, a goal stressed at the outset of this paper.

The relative power of place versus the relative power of individuals in producing the uniformities and differences observed among the academic worlds can be raised as a counterargument. Clearly, institutions make choices about who to hire and individuals make choices about where to work – how are we to assess the relative weight of social versus self-selection?

Selection and contextual effects, and their potential impact, must be viewed in historical context. Academic jobs have been scarce, especially over the past 30 years. As a result, the possibility of individuals self-selecting institutions for employment is considerably slim. Is it possible that some individuals self-select by eliminating institutions from consideration, places such as prestigious schools where they believe they stand a poor chance of receiving offers. But since competition for jobs is high, eliminating possibilities from the start would sharply reduce one’s pool of opportunities. Self-selection is likely to be more widespread in times when individuals have more choices for where to work. Thus, self-selection can in principle play a role in forming the worlds of science (and also all other occupational worlds), but in practice its impact is likely to be small or nil, given market conditions. The elite, pluralist and communitarian worlds remain distinct in fundamental ways, not simply because they select individuals who are distinct to begin with, but because they induce systematic change in the individuals who enter and make passages through them, as the data have indicated.

In perhaps larger ways, prevailing market conditions have fostered social selection – the latitude that institutions of all kinds have in hiring candidates. Given the magnitude of competition, the candidates selected by departments are likely to be just as capable as many of the people turned away. This is a key component of ‘institutional upgrading’, wherein schools are in a market position to employ people of a higher standard compared with those employed in years past.

Are scientists happy? While surveys conclude that they are, the results of this work have afforded a more rounded look at how the academic life is subjectively experienced, especially when exploring people’s self-doubts. These results do not necessarily contradict survey findings – people can be both satisfied and doubtful about themselves, their line of work, and/or the