The Window of Opportunity

Nancy E. Levinger

Photo: Peter B. Seel

As a beginning graduate student, well before I even met the man I would eventually marry, I recall considering my future. I was training to become a scientist, but would I find a partner? Would my career path allow me to have a family? Although these basic personal choices had always seemed inevitable to me as a child, in the frenetic schedule of a chemical physics graduate student they were anything but given. At that point, studies showing the impact of advanced education on women's personal lives had yet to appear [1]. Still, it seemed clear; the likelihood of finding a partner while spending almost all my waking hours working on science was probably pretty small. After many musings, I made an active decision: the rich career afforded by my advanced degree would fulfill me whether I married or not, or had a family. This decision played a role in my success as a graduate student. It allowed me to focus my energy on science and leave my personal life to chance. I thrived in graduate school, both academically and personally. About two years later, I met Pete, the man who would become my best friend, my husband, the father of my children, and the person who made it possible for me to succeed in my career as a professor and as a mother.

So what does success look like for Prof. Mother? What kinds of obstacles existed for me as a graduate student in the 1980s, an assistant professor in the 1990s, and now as a full professor [2, 3]? What extra challenges arose because of my personal

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R. Cole et al. (eds.), *Mom the Chemistry Professor*,
DOI 10.1007/978-3-319-06044-6_8,

choice to raise a family? Although I do not claim to have universal answers to these questions, I believe that my life provides insight into the things that make it possible for women to thrive simultaneously as academicians and mothers, and some of the significant issues that still remain. The individual path for each woman will vary but some well-considered choices can increase the chances of reaching satisfaction in both career and personal life.

Early Career Decisions

I believe that the decision most critical to successfully balancing career and family rests on the choice of partner. An academic career places tremendous demand on individuals regardless of their personal choices. A supportive partner understands the career demands. A family also places demands on parents. A supportive partner understands and happily steps up to share the demands that come with raising children.

When Pete and I decided to marry, we discussed whether we would have a family. Both of us hoped that our union would include kids. Our wedding vows included a line "I take you…to be the mother/father of my children" (which overjoyed my own father who until that point was not sure we wanted to have our own children). When we would actually fit this into our research-full lives remained a mystery. Finishing my Ph.D. and moving on to a very demanding postdoctoral fellowship, I wondered if we would find a way to start a family. Already in my 30s, we knew that risks associated with pregnancy would only increase and that our energy to keep up with kids would wane as we grew older. When my search for an academic job loomed in the summer of 1991, Pete and I decided that we had a window of opportunity. We would stop using birth control for four months from June to September; if I became pregnant, we would have a baby in between my postdoc and professor jobs. If not, we would wait. Three months passed without a positive pregnancy test, but in September 1991, the last month of our window of opportunity, I became pregnant. We were elated and nervous. This meant that my academic job search would include balancing preparation and, hopefully, interviews while pregnant.

In 1991, just being a woman seeking a faculty position at a research-intensive institution placed me in a small minority. Adding pregnancy to that mix was not something I wanted to broadcast, so, except from a very small number of close friends and family, I hid my pregnancy. I applied to jobs posted at 21 different institutions and was thrilled to receive invitations for several interviews. During January 1992, I interviewed at three different institutions, which was also the beginning of the second trimester of my pregnancy. Though I had already gained weight, I felt that the pregnancy was not yet really showing. However, that did not stop a potential colleague at one of the interviews from stopping dinner conversation to ask me (in front of four other potential colleagues), "So, Nancy, it looks like you have gained some weight since we last met. Do you want to tell us why?" I was mortified and answered, "No." Years later the professors present at that fateful

dinner told me that they knew I was pregnant and it did not matter. Whether it mattered or not can never be known. Nonetheless, I feared that if I confirmed the pregnancy it might jeopardize my possibility to receive an offer from that institution or anywhere else. When I finally revealed my pregnancy to my postdoctoral advisor, he was shocked but supportive. In the end, I was thrilled to receive an offer to join the faculty at Colorado State University. I might have received other offers but having grown up in Fort Collins, CO, and with my parents and sibling still living there, this opportunity seemed like a dream come true. My Colorado State University colleagues speculated that I was pregnant, a fact I did not confirm until I had accepted the job offered to me.

My first child, Ian, was born early in July 1992. Six weeks later, I started as a brand new assistant professor of chemistry at Colorado State University. Four years and two miscarriages later, my second son, Eric, was born in late July 1996. Both births and all pregnancies occurred prior to my earning tenure. In 1995, Colorado State University began considering options for probationary faculty to extend the tenure clock for personal reasons such as childbirth. With a newly passed policy [4], I may have been the first faculty member at CSU to extend the tenure clock on the basis of childbirth. Exercising the option to delay my tenure decision reduced stress and gave me time to fill gaps in my academic vita. The extra year of uncertainty about my ability to meet the expectations and earn tenure added to personal stress. Through three pregnancies (two miscarriages and one viable) I had spent ~15 months of my time as an assistant professor pregnant. Having balanced work and caring for infants my curriculum vitae had obvious gaps. From frank discussions with more senior colleagues, I know that some questioned my productivity (or lack thereof) during the time of pregnancy and infant care. Although data suggest that extending the tenure clock can lead to salary inequities, the data also show positive impact on promotions [5]. I continue to be grateful for the opportunity to postpone the tenure decision, an opportunity that is now nearly universal at academic institutions for women and men alike.

Not knowing the pressures presented by the simultaneous start of my independent academic career and family was probably good for me. Had I understood the challenges that both would place on me, I may never have chosen to have children. As it was, we managed. With the help of two spectacular nannies, I learned to balance demands of a career at a research-intensive university with the needs of infants, toddlers, and young children. Initially, my husband worked in Boulder and then in Denver, more than one hour's drive away so child emergencies were entirely my dominion and there were plenty of them—the nanny calling in sick at 7 am when I had to teach my class at 9 am (Grandma to the rescue!), the fall that four-month-old Ian took yielding a goose-egg sized lump on his forehead and a skull X-ray (he was fine). A few months before Eric was born, my husband achieved his career goal of gaining employment at the Hewlett-Packard site in Fort Collins. Trading his hour plus commute to work with a 10 minute by car, or 30 minute by bicycle, commute drastically improved our quality of life. He was much less tired and so much happier, which made him more able to support my frenetic schedule.

Eric, Nancy, and Ian while on sabbatical leave in 2000

Academic Success

When I entered graduate school after college, I was pretty sure that I wanted to pursue an academic career. The balance of research and teaching seemed like something I would really enjoy. My experiences as a teaching assistant assured me that I liked teaching; research, although demanding, was also stimulating and exciting. Shortly before earning the Ph.D., I discussed careers with my graduate advisor. When I expressed interest in an academic career, he probed me, asking what kind of academic job I felt would be best. At that point, I could not imagine what kind of research I could do at a primarily undergraduate institution so I aimed for a position at a research-oriented university. In hindsight, this seems like a rather random way to pursue this demanding career.

During my postdoc, a workshop led by Dr. Tom Blackburn, then a program officer from the ACS Petroleum Research Fund, provided critical guidance and gave me confidence that I could succeed in as a professor at a research-intensive university. Tom, assisted by University of Minnesota Professors Peter Carr and Larry Miller, led a group of chemistry postdocs and graduate students through a short exercise in which we came up with ideas for research proposals. Even though I had garnered a prestigious NSF Postdoctoral Fellowship, I doubted my ability to generate fundable research ideas. This short exercise at a critical junction in my life demonstrated to me that I had lots of fundable ideas. The confidence boost was enough to encourage me to apply for faculty jobs at research-intensive institutions. You might expect that gaining this confidence would be enough to allay my self-doubt from then on, but lagging confidence would continue far into my career.

As an assistant professor, I applied broadly to granting agencies for funding. My applications yielded early fruit, netting funding from the ACS PRF and then a

prestigious NSF Young Investigator award. I also teamed up with colleagues to write two instrumentation proposals, both of which received funding. Although money came rather easily, papers were much more challenging. When my first full paper was rejected for publication, I did not know what to do. I had never experienced this as a graduate student or postdoc. Those results remain unpublished to this day because I did not realize that one could simply revise the paper and resubmit. Now I serve as a mentor for junior faculty, and in this role, I hope to preclude some of the mistakes I made.

Role Models and Encouragement

As society started to accept women's abilities, most women of my generation, born towards the end of the "baby boom," did not encounter the enormous overt barriers to pursuing science faced by earlier generations ([2]; [6]). Without doubt, my father had the most significant influence on my early scientific interest and success. I remember the excitement and fascination I had when my third grade class had a unit studying astronomy. Realizing my interest, my dad encouraged me to explore much further than my third-grade class. He pulled a book of star maps from the shelf and he and I poured over them to figure out what we could see in the dark night sky. Together we marveled at science in the first episodes of NOVA that began airing on public television around 1973. I was particularly enamored by the episode entitled "The First Signs of Washoe," reporting about a chimpanzee who learned sign language. By the time I started junior high school, I sought and received the opportunity to take science instead of the required home economics course. I also participated in a program entitled, SCIP (Science Careers Investigation Program) that took girls and underrepresented minority students out of school for field trips to encounter science firsthand. By the time it came to apply to college, I knew I would pursue a science career.

For most of my career, even though I had wonderful academic mentors, I did not have a female role model. In retrospect, I realize that a few role models existed, but I did not connect with them. My rejection of female role models puzzles me now but fits a well-documented pattern. Raised in the same society, women are just as likely to demonstrate implicit bias toward men in male-dominated fields and roles [2, 7, 8]. By now in 2014, most overt gender discrimination is a thing of the past. Unfortunately, covert gender bias is still alive and well. We all have biases. We use many of them automatically to make the decisions we constantly face in life. The problem arises when bias limits our ability to pursue or achieve our goals. As an assistant professor, I received a prestigious NSF Young Investigator Award (the predecessor to CAREER). A male colleague of mine, two years ahead of me on the tenure track, had also applied for the award but did not receive it. Rather than congratulate me on my award, he told me that I had only received the award because I was a woman. Needless to say, his comment fed my insecurity making me doubt whether I really deserved the award. Although it should be a thing of the

past, 20 years later a young female colleague of mine suffered the same response from our young male colleague when she received a prestigious award.

In my current position, I continue to struggle for gender equity. As a young professor and parent, I was told by the chair of our promotion and tenure committee, "Nancy, your priorities are not right. You need to place research way above everything else, significantly above your familial obligations and way above teaching and service." I responded that family and research could be equal but I could not place research above my familial obligations. I hope that no junior faculty member of mine would receive the same demand. My challenge now is to recognize barriers when they arise. This may sound odd—we should recognize a barrier in the way of our progress. But often the discrimination can be difficult to identify. This is particularly true for the standards to which women are held compared to men.

Impact of Career on Family and Family on Career

We usually think of family influencing career, but career can also influence family. Sometimes it is hard to figure out which way the arrow points, Family → Career or Family ← Career? Surely those temporary issues like dealing with a sick child or having to pick kids up from day care on time fall under the category of family impacting career. Having meetings to attend out of town or work obligations that must get done fall under the category of career impacting family But most of the time, we rely on our understanding of chemistry to understand the interaction. We seek balance in equilibrium Family ⇌ Career. So how have I found this elusive equilibrium?

For the first eight years of our children's lives, my husband and I chose to hire a full-time nanny, the most expensive but also the most convenient childcare. Initially, my husband's entire take-home pay barely covered the nanny's salary and the house mortgage, but it was worth every penny that we spent. We were blessed to have two exceptional nannies Randi and Donna for all but four months of those eight years; in between these two, we had another nanny who did not work well with us. Our nannies did not live with us. They arrived at our home at about 7 am and stayed until 6 pm. They did so much more than just tend to the children—all the laundry, much of the shopping, some food preparation—in addition to providing an attention-rich environment for the boys. After both children were in school full-time, we hired a series of wonderful after-school babysitters who picked the kids up and cared for them until we got home. Each had her own style and the kids loved them all. We continue to maintain contact with all of these wonderful women many years after they stopped working for us. Our attention to our nannies' needs helped them to be able to stay with us for years. Indeed, we have continued to help both in times of need and they have returned favors for us. Most of the weddings our kids have attended were of their former babysitters!

One way that my career has influenced our children is through their exposure to and reliance on lots of people other than their parents. Ian developed lasting ties to

Randi, who cared for him from age 6 weeks to more than 4 years. Eric developed significant ties to Donna, who began caring for the children when he was ~8 months and only stopped caring for them when we left for our first sabbatical leave, a few weeks before Eric's fourth birthday. Both nannies worked as a team with my husband and me. They echoed our values, read to our sons, took them to enriching activities like swimming lessons, and more. Part of who my sons are today comes from their strong relationships with these wonderful nannies.

When the children were young, I never felt as though I was doing enough, neither as a faculty member nor as a mother. I remember discussing this with a friend when Ian was about four years old. I intimated my concern that I was not spending enough time either at work or at home. Ian piped up and said, "but Mama, you spend lots of time with me." At that point, I knew that even if I did not spend all my time with him like many of my stay-at-home-mom friends, I spent *enough* time with him. I tried to stop berating myself about the amount of time I spent with my family and focused on making that time the best time possible.

My constant interaction with college students has affected the way that I treat my children. As a professor, you would think that the "the dog ate my homework" stories would stop and that you would not be subject to the interference by the parents of our college students. Seeing students perform below their ability in college has colored my view of my own kids' futures. Dealing with angry, accusatory parents of college students has impacted the way I treat my sons. In cases where other parents intervene and advocate, I am much more likely to take a backseat and expect my child to solve his problem himself. Perhaps this put my kids at a disadvantage during elementary, middle, and high school. However, I believe that my expectation that they figure out solutions to their own problems will have long-lasting positive impact on my children. I hope that my expectations will lead them to take responsibility and initiative leading them to productive lives.

When asked how my career choice has impacted them, my sons responded predictably. First, they have never experienced life with their mother staying at home. Even if other mothers stayed at home, they did not feel that my career choice negatively impacted their lives. My older son noted that with a Prof. Mother, a child is never on vacation. When they would pose a question, invariably they would stimulate the Socratic method in their mother leading to many more questions than answers. Alternatively, a significant estimation would occur, like trying to figure out if there is a mole of grains of sand on Earth. My career choice has enriched my sons' lives, especially through sabbatical leaves taken away from home. Living in the Bay Area on three different occasions provided new experiences for the whole family.

Ian, Nancy, and Eric on their way from the Exploratorium in San Francisco, 2010

Nancy's 50th birthday in Barcelona with Pete

Advice and Recommendations

Frequently throughout my career, I have entertained the question, "How do you do it? How do you balance career and family?" Early in my career, this question was hard to answer. "You just do it." is probably the best I could manage in the beginning. At least once early in my academic career, I remember a woman graduate student who was taking the course I taught saying to me, "I don't want to be like you. I want to have time for my family!" This comment felt incredibly depressing. Instead of serving as a role model, I felt like an anti-role model. Indeed, balancing an academic career with spouse and kids has a different meaning for women academics than it does for men [9]. But this comment resonated with me and motivated me to speak about my experiences.

Advice is a dangerous thing to give and to take. Personal and professional situations vary so there is no "one size fits all." Still, I believe there are important lessons one can take from my career. Here are a few:

- Your choice of a partner is probably the most important variable you can control. Choose a partner who understands the demands of your academic career and wants to help you to succeed in it. Studies show that women tend to carry more than 50% of domestic responsibilities [10]. Choosing a partner who takes on significant domestic responsibility (cleaning, cooking, shopping, childcare, etc.) makes it possible to balance academic and personal tasks. Choosing a partner who is patient, supportive, and committed is the most important thing you can do to succeed in your position.
- When you are emotionally ready to start a family, stop using birth control. When you get pregnant, you will figure out how to work this into the equation. There are, of course, somewhat better and worse times to start or add to a family. But there is no real "right time" so waiting to start can lead to problems associated with being pregnant later in life.
- Find out what policies exist that can help you achieve your professional goals and exercise them if necessary. Policies to stop the tenure clock can seem dangerous so we must continue to educate colleagues that adding time to the probationary pre-tenure period should not raise expectations for productivity. Although slow to come, this understanding seems to be taking root. If you need to stop the tenure clock, do it and don't worry!
- If you are planning a family or expecting a baby, have a well-devised and comprehensive emergency plan. If your regular childcare falls through, have a backup plan. Who will you call? Who can help you? There are many people who want to help—let them!
- As soon as you have enough money, pay others to do the things you don't like to do or don't have time to do. Time is in short supply when you have a career, let alone career and family. It is worth spending money for someone to clean your house, do yard work, cook your meals, or whatever you would prefer not to do.

- Look for role models and mentors. Listen to their advice and work to incorporate it into your life.
- In his book, *The Four Agreements* [11], Don Miguel Ruiz lists four agreements to live by: (1) Be impeccable with your word (don't gossip); (2) Don't take things personally; (3) Don't assume anything; and (4) Always do your best. Of these, the first and last are pretty straightforward. Most of us do them without trying. We often interpret the words and actions of other people to mean that we are somehow wrong or inferior when in actuality, these words and actions reflect issues in the person serving them. Not taking these actions or words personally allows us to analyze the situation without becoming hurt or glamorized. Likewise, assuming that others understand us can lead to significant problems. Much better to remove doubt about your words, actions, and intentions. These agreements can be hard to follow, but if you can, your life will be easier.

Finally, find time for yourself. Life is short and you do not know where it will lead. Carpe diem!

Main Steps in Nancy's Career

Education and Professional Career

1983	B.A. Integrated Science and Physics, Northwestern University, IL
1990	Ph.D. Chemical Physics, University of Colorado –Boulder, CO
1990–1992	NSF Postdoctoral Fellow, University of Minnesota, MN
1992–1999	Assistant Professor, Colorado State University, CO
1999–2005	Associate Professor, Colorado State University, CO
2000–2001	Visiting Scholar, Stanford University, CA
2005–present	Professor, Colorado State University, CO

Honors & Awards (selected)

2005	Fellow of the American Physical Society
2004	Margaret Hazaleus Award, Women's Caucus, Colorado State University
1994–1999	National Science Foundation Investigator Award

Nancy is the founder of the NSF Chemistry REU Leadership Group. She is also University Distinguished Teaching Scholar and holds a courtesy appointment as a professor of Electrical and Computer Engineering at Colorado State University.

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