

The Career Goals of Non-Tenure-Track Full-Time Engineering Faculty

Cliff Fitzmorris, Randa Shehab, Deborah Trytten

College of Engineering
University of Oklahoma
Norman, OK

Abstract— Roughly one in eleven engineering faculty members in the United States are full-time and are not in tenure-track positions. It has been established that non-tenure track faculty members can enrich an engineering program by bringing industry skills and practical career experience into the classroom. These full-time non-tenure track faculty members have varied experience and they have varied career goals. Some of them may desire tenure-track positions while others may not. In many engineering programs, there is no clear path for a full-time non-tenure-track faculty member to attain tenure.

This study consists of interviews with ten full-time non-tenure-track electrical engineering faculty members who teach in eight large, public, research universities. The survey will explore the career goals of those faculty members including the desire for an electrical engineering tenure-track position as well as which aspects of a tenure-track position would be desirable, such as career stability, participation in departmental governance, and a greater voice in program decisions. We will also explore aspects of seeking a tenure-track position that may not be desirable, such as the increased workload involved in research and publishing, or a perceived necessity to teach fewer courses as more effort and time is given to research.

Keywords—*non-tenure-track; contingent; tenure; qualitative*

I. INTRODUCTION

The number of full-time non-tenure-track (FT-NTT) faculty in universities in the United States is growing rapidly [1]. Engineering colleges are seeing this same rapid growth in the full-time non-tenure track ranks. According to data obtained from the American Society of Engineering Education's Survey of Engineering Colleges [2], 8.9% of all full-time faculty at engineering colleges are non-tenure-track.

With roughly one in eleven full-time faculty members being non-tenure-track, it is natural to wonder whether this trend is good for students. Attempts have been made to show whether tenure-track professors produce better student outcomes than non-tenure-track teachers with mixed results [3][4][5]. An important consideration in these studies are the preconceptions that the researchers bring with them to the study. Some theoretical frameworks are more useful than others in explaining the motivation and success of non-tenure-track faculty [6].

Gappa and Leslie [7] studied part-time non-tenure-track faculty and found that attempting to understand part-time faculty

as a whole is difficult because the group is not homogeneous and different segments of the population have different motivations and goals. They identify four different categories: aspiring academics, freelancers, specialist/professionals, and career-enders. Aspiring academics were teaching part time in hopes of obtaining a tenure-track position. Career-enders did not desire a full-time position, but had retired and were looking for just a class or two. The specialist/professional category is especially prevalent in engineering education since this group is composed of people who are actively practicing the profession and teach one or two classes on the side.

We expect that the study of full-time non-tenure track faculty will require a separation into categories as well. The four categories identified above that were useful in understanding the part-time teaching faculty are a good starting point for understanding the full-time non-tenure track population. One question to investigate is whether these four categories describe FT-NTT faculty as well as they describe part-time non-tenure track faculty.

It is tempting to assume that all FT-NTT faculty are aspiring academics who desire tenure-track positions should one become available. If this were true, perhaps departments should provide some path to tenure in order to motivate and retain this pool of talent. If, on the other hand, FT-NTT faculty are not interested in tenure but are motivated by something else, then providing an alternate career track would be useful. Knowing what motivates non-tenure-track faculty could also inform recruiting efforts. The ability to attract and retain quality FT-NTT faculty can help a department meet its teaching objectives.

Our goal in this study is to explore the career goals of ten FT-NTT faculty members who teach electrical engineering at large, public, research institutions. We will explore their motivations to pursue a tenure-track position. We will explore the aspects of tenure that are attractive to FT-NTT faculty as well as those that are unattractive.

Our research questions are:

1. Do full-time non-tenure-track teaching engineering faculty desire tenure-track positions?
2. What career progression, if any, is available to them in their department?
3. What aspects of tenure, if any, are appealing and unappealing to them?

II. METHODOLOGY

This study is a general qualitative study [8][9] using a criteria-based sampling strategy and a semi-structured interview [10] to collect data. We used a sample size of ten which for a qualitative study of this type can produce significant results [11][12].

A. Sampling

Since the purpose of this study was to explore the career goals of typical FT-NTT teaching faculty, we chose sampling criteria that would select participants from a typical teaching environment: large, public universities with a proportion of FT-NTT faculty similar to the national average. We used the American Society of Engineering Education data mining tool to determine which universities have a proportion of full-time non-tenure track engineering faculty that are similar to the national average [2]. We visited the public website of the electrical engineering department at each university and looked for faculty titles that included the words instructor, lecturer, or teaching. We chose electrical engineering because every university we chose had an electrical engineering department and since the researcher conducting the interviews is an electrical engineer, he could better understand the nuances of the interview. It is possible that this strategy missed some FT-NTT faculty members because their titles did not include these key words although only one of the universities we looked at did not have any faculty members with the aforementioned title modifiers. We sent out forty recruitment emails to prospective participants at thirteen universities. We conducted ten interviews with participants from eight universities.

B. Data Collection

The interviews were conducted via telephone. There were fourteen questions and each interview lasted between thirty and forty-five minutes. Participants had been provided copies of the interview protocol several days before the interview to provide them with an opportunity to reflect on the questions in advance. Since the interviews were semi-structured, all the participants were asked the same questions but the interviewer had the freedom to ask clarifying and probing questions.

C. Data Analysis

The interview transcripts were coded using data analysis software (NVivo) that allowed coding of the audio directly without the need for transcription. We used a preliminary code set initially but added codes as the interviews were processed and as themes emerged from the data. The preliminary code set was developed from the research questions and included codes for current and available positions, the potential for and benefits of career advancement, and aspects of tenure that were desirable or undesirable.

Direct quotes from the interviews appear later in this paper and appear in italics. Text that appears in square brackets indicates a substitution made for clarity, for example to replace a pronoun. An ellipsis indicates that part of the sentence was left out of the quote for brevity, typically an aside, tangent, or rectification that did not provide useful information.

D. Subjectivity Statement

The author who conducted the interviews and performed the data analysis is a full-time non-tenure-track faculty with industry experience. While conducting the interview, he attempted to maintain a neutral posture but his background influenced the probing questions that he chose to ask and the topics that he chose to clarify. During data analysis, he was especially careful not to project his personal feelings onto the data and to accurately portray the views of the participants.

III. RESULTS

A. Desirability of Tenure

None of the ten participants in this study wanted to pursue a tenure-track position at their institution. Even if there was a path and even if the position were offered to them, they would not leave their non-tenure-track position to become tenure-track. In response to the question “What is your decision process when you think about staying non-tenure-track versus becoming tenure track?” one participant responded:

That decision would take almost zero mental bandwidth. I do not want to do what the tenure-track associate professors do. They are held to a publish-or-perish standard and that has always been a big turn-off for me. I don't want to go there.

Another participant noted that she would have to decrease her teaching load:

What would that gain me? If I enjoy the teaching, why would I want to swap that out for having to hunt down research funding?

The most common reason given for not wanting to pursue tenure was the participant being unwilling to spend more time on research if that meant spending less time teaching. In response to the clarifying question “So you would rather teach than publish?”, one participant said:

Absolutely, I'm a born teacher. I've known that all of my life. Now I'm in a position where I can actually afford to do it.

Another participant said:

Every aptitude test I've taken from elementary school until now has told me that I should be a teacher. I can see that what some of [tenure-track] people are doing is truly cool, interesting stuff. I can see the allure from their point of view. If you truly love what the research topic

is, you might be willing to put eighty hours a week into the job. When I was working in industry and working on pet projects, eighty hours felt like just another week, it wasn't a burden. But I don't have that drive in research. There's nothing driving me to want to get my PhD and put myself into that situation. Particularly because not only do you have all that responsibility, but because that extra responsibility takes you out of the classroom and you lose that time to focus on your teaching and you don't get to know the students as well.

B. Sources of Motivation

For nine out of the ten participants, their primary motivation for being a FT-NTT faculty member is an intrinsic love of teaching and working with students. Three of the ten participants spontaneously referred to their career as “a calling”. The primary motivation for one of the participants was the predictability and stable schedule at the university compared to her industry career. While salary and status were important considerations, they were not important motivators for these participants.

Regarding their career motivation, one participant said:

I've come to this because it's more of a calling. I have some experience in industry so I have really different motivations ... because you really want to make a difference, there's a real need for students to get their degree, you want to make it better than when you went through. You want to make a difference.

From another participant:

You're definitely not in this for the money. The pay is about 50% higher out in industry for someone with my background. You've got to love teaching the students and helping them become engineers that are professional, educating them.... You really have to have a passion for that. This is not an 8-to-5 job.

Another participant discussed his motivation for teaching compared to salary:

I love my job. There are issues with it, obviously, but I love what I'm doing. I would recommend it to somebody who is willing to deal with some disappointments, like not having the same level of career advancement. As long as

what you want to do is teach and that's the thing you actually have a passion for, I would say it's worth it. I make enough money and I have the insurance that I need... If you don't love to teach, this is not the job you'd want.

C. Path to Tenure

None of the participants in this study were interested in pursuing a tenure-track position, but we asked them if they were interested, was there a path to tenure and if so what that path would involve.

For participants who had a terminal degree, there was a path to tenure and it was the same path that any other candidate for the position would follow. Apart from relationships they had formed in their department, the process for them to become tenured would be to apply for a position when it came open. It was clear, however, that the criteria for being hired was the quality of research and since most of the participants had been in industry and teaching for some time, their chances were not good.

For participants without a terminal degree, the path to tenure would include finishing a doctoral degree. In all cases, this was not considered a viable path because it would require devoting a large amount of time and energy into research and therefore decreasing the time in the classroom and with the students.

D. Career Titles and Progression

The participants have a wide range of titles but they can be grouped into three categories. Four of the participants have titles similar to those of the tenure-track with a modifier attached, for example Associate Professor of Practice or Assistant Professor, Teaching Faculty. Four of the participants have the title of Lecturer, sometimes with a modifier like Senior or Principal. Two of the participants had the title of Instructor: Senior Instructor and Instructor.

The prospect of career progression also vary widely among the participants. The most sophisticated system (one institution) had a nine-cell matrix of titles with one dimension being the titles of Lecturer, Senior Lecturer, and Principal Lecturer and the other dimension being the level, either 1, 2, or 3. A more typical progression has three titles: Instructor, Lecturer, and Senior Lecturer. Four of the participants can progress along an alternate “career-track” which was not tenure-track but used similar titles like Assistant Professor, Associate Professor, and Full Professor. There are varying modifiers such as Professor of Practice or Lecturing Faculty or Teaching that distinguish the alternate track titles from the tenure-track titles.

It was common for participants to note that the titles used by their department or the progression used by their department were different than other engineering departments or the university at large. Even though there seemed to be the possibility for career progression, often all of the FT-NTT faculty were categorized in just a subset of the available roles. The department with the nine-cell matrix of positions had all of the faculty grouped into only two of the cells. The participant from that department was surprised to find out that he was only

a short time away from qualifying for a promotion, but only found that out when preparing for the interview. In all, four of the participants felt like the requirements for promotion were clear and four did not know what steps needed to be taken for promotion or felt like the requirements for promotion were vague and unclear. The other two participants did not comment on the promotion process of their departments. Overall, the career progression for most of the participants seemed informal and ill-defined.

Several participants expressed dismay that in order to progress in their career, they needed to obtain a doctoral degree but that obtaining a degree in education would not count. While talking about the necessity of a terminal degree to be promoted along the non-tenure-track, one participant commented:

I would argue that maybe it is appropriate that you need a PhD for that level, but let's clarify that. A PhD in [specific technical field] which is what my Master's degree in, is not going to help me in any way. That should not count towards the promotion. But something along the lines of educational psychology or engineering education, one of those PhDs where the focus of the research is improving pedagogy. That has merit, but in my department, that PhD would be counted as less valuable than a more technical degree.

Another participant expressed frustration:

It's frustrating to me because I went back to get my PhD but I was completely uninterested in the classes and research. I want to teach, that's what I want to do. I don't want to spend my time on things that don't contribute to that just to get a piece of paper that will allow me to be promoted.

Six of the respondents spoke about the benefits of promotion within their department. All six noted that there is a pay increase, always described as small, and for two of the participants there was an increased contract length. This additional career stability seemed to be much more valuable to the participants than the raise in salary.

E. Career Stability

We did not directly ask about contract length but six of the participants commented on it. One of the participants in the study has a five-year contract and expressed significant satisfaction with it. Four of the participants have three-year contracts and one had a semester-by-semester contract. In all cases, the contracts were fixed length and were either renewed at the end of the contract or not. The participant with the semester-by-semester contract, who would seem to be the most vulnerable, expressed confidence in his continued employment

not because of his contract, but because the classes he teaches “need to be taught and no one else wants to teach them”. Two other participants noted that they teach the Capstone Design course, which is required by ABET, and since the tenure-track faculty did not want to teach that course, they felt that they were more likely to have their contracts renewed.

One example of a participant who did not depend on his contract for career stability said:

Coming from industry, I knew at any moment that if I was failing to do my job or deserved to be terminated, I would get maybe two weeks' notice. So to have a one-year contract or a three-year contract, honestly it wouldn't change my career or my attitude... If funding cuts continue and there's a financial emergency, then we're all on the chopping block [regardless of contract length] and I don't think I'd be the first to go because I teach Senior Design.

When the participants spoke about their contract lengths, it was interesting that the end of a contract was not always accompanied by anxiety or uncertainty, although one participant did mention that “the battle comes at renewal time”. Most of the participants felt that their continued employment did not stem from their contract length, but from the role that they played in the department, especially the courses that they taught. One participant noted:

At first, I was worried every semester, am I going to get renewed, am I going to get renewed? It's been years though and now I'm somewhat required for the department to function. If it weren't for me and a few other people, the classes simply wouldn't get taught. So while every semester it's technically up in the air whether my contract renews, in reality, I will always get renewed

IV. DISCUSSION OF RESULTS

A. They're Professional Teachers, Not Aspiring Academics

The participants in this study clearly do not fit the description of the “aspiring academic” because they are not seeking a tenure-track position. In fact, it is clear from their interviews that if a person wanted to become a tenure-track faculty member, taking this type of position may lead to frustration and stagnation. For most of these participants, the decision is not whether to pursue tenure or not, but whether to return to industry or not. Industry pays better but most of these participants are intrinsically motivated to teach and work with students and those opportunities are limited in industry. These participants seem to be an outgrowth or an evolution of the specialist/professional category identified by Gappa and Leslie [7]. They were

specialist/professionals but their desire to teach led them to move from full-time practicing engineers and part-time teachers into careers that are part-time practitioners and full-time teachers, a new category that we call “professional teachers” for two reasons. One reason is because teaching is now their profession and the second reason is that what they are teaching is the engineering profession, they are teaching students to become engineering professionals. They feel “called” to form their students into engineering professionals using the experience they gained from working in industry.

While the participants in this study did desire some career aspects often associated with a tenure-track position such as increased career stability, for their accomplishments to be recognized, and for meaningful career progression, these aspects could be gained in a “career track” that is not tenure-track. For example, a three-year “rolling contract” in which the department makes a three year commitment to the faculty member that is renewed each year would increase career stability. Meaningful promotion through a set of ranks would recognize teaching excellence and length of service.

B. Career Progression

Although none of these ten professional teachers desired tenure, they did desire some aspects of tenure. The aspect of tenure that was desired most often was additional career stability. It was expected that new non-tenure-track faculty would have a shorter contract length, but there was a desire for that contract length to increase as the faculty member gained more service in the department. Rolling contracts as opposed to fixed-term contracts were even more desirable because it mitigates the uncertainty of renewal. There is a subtle benefit to longer contracts that was mentioned by the participant who had the five-year fixed contract. His longer contract allowed him to plan farther in advance with confidence that he would be around to finish the implementation which was a benefit to the college. If a faculty member has a one-year renewable contract, they are less likely to plan two or three years in advance.

The second aspect of tenure that was desirable was a meaningful ranking system. Four of the participants had such a system in their department, modeled after the tenure-track but separate from it. The other participants did not have meaningful ranks. This was desirable because increasing through the ranks distinguishes those who have long service or have made significant contributions from those who are just starting out in the department, providing additional symbolic capital.

The issue of making progression through the ranks dependent on having a terminal degree was irksome to several of the participants. If they came from an industry where a terminal degree was not necessary, they saw it as a needless diversion from teaching unless the terminal degree was in the scholarship of teaching. Allowing an exception for significant industry experience or allowing engineering education research to count towards promotion were suggested solutions to this issue. Participants who had terminal degrees received them before they became full-time teachers, so this was not an issue for them. In all cases, the prospect of getting a terminal degree while being a FT-NTT member did not seem worth it unless that degree was going to improve their teaching.

V. CONCLUSION

These ten FT-NTT faculty do not want to transition to tenure track. While they would appreciate some aspects of tenure, specifically the additional career stability, higher pay, and meaningful career progression, they are clearly not interested in developing or maintaining the type of research program associated with gaining tenure at a research university. Research in the areas of engineering education, especially the scholarship of teaching, was interesting to them and several participants would be interested in developing a research program in those areas. Continuing education opportunities in the area of engineering education are valuable to non-tenure-track teaching faculty.

FT-NTT teaching faculty have a strong concern for undergraduate students and especially their preparation for industry but are not as interested in the graduate program. Including the teaching faculty in the undergraduate program decisions but not the graduate program makes sense.

Departments that value their non-tenure-track faculty should examine the career progression for non-tenure-track faculty members and seriously consider making the “career track” a well-defined and predictable career path. The desirable aspects of tenure, longer contract lengths and increased involvement in departmental decisions relating to undergraduate education, eligibility for awards and education grants, could be provided for the career track without modifying the tenure-track process.

Since the non-tenure-track full-time teaching faculty will be primarily concerned with teaching and will have little time to pursue a separate research program, it makes sense to recruit people for the positions that are passionate about teaching and to deemphasize their research credentials unless that research was related to engineering education. It is clear from our participants that hiring a person whose career goal is to become tenure-track into a non-tenure-track position with the hopes of a transition later may lead to frustration on the part of the faculty member and can be harmful to future tenure prospects unless the demands of teaching and research are carefully balanced.

The tenure-track and the non-tenure-track are two different, but complementary components of most engineering departments at four-year research universities and it will become more so in the future. It is clear that both the tenure-track and the non-tenure-track faculty have a significant impact on the day-to-day lives of the undergraduate students through their teaching and advising. Recognizing the importance of the non-tenure-track faculty and taking steps to ensure their development and career satisfaction will not only increase their motivation to teach but also should lead to better undergraduate outcomes.

Understanding the career goals of full-time, non-tenure-track faculty members will help engineering programs design policies that will further the career goals of their non-tenure-track faculty without necessarily requiring them to pursue tenure. Understanding the career goals of non-tenure-track faculty can help us build engineering programs that are inclusive of this fast-growing segment of the faculty and encourage their active participation in building and strengthening those programs.

VI. FUTURE DIRECTIONS

This qualitative study explored the career goals of a limited sample of full-time, non-tenure track teaching faculty working in engineering programs at large, public research universities. There are other avenues that should be explored to understand this topic in more detail.

While it is interesting that all ten of these non-tenure-track faculty did not desire a tenure-track position, it is not reasonable to generalize that result to the population at large. A larger, quantitative survey of non-tenure-track faculty would allow the testing of that finding to determine whether it is generalizable.

There are other aspects of the FT-NTT engineering faculty experience that were mentioned by the participants in this study but were not a part of the interview protocol in this study and therefore received limited attention. Additional topics are: the pathway into the non-tenure-track career being unpredictable, non-tenure-track faculty feeling like “second-class citizens”, the role of industrial experience in engineering education, and the role and availability of mentoring for non-tenure-track faculty. Future qualitative studies will focus on these additional topics uncovered during our interviews.

REFERENCES

- [1] J. Cross, E. Goldenberg, *Off-Track Profs: Nontenured Teachers in Higher Education*. MIT Press, 2011
- [2] American Society for Engineering Education (ASEE), *Profiles of Engineering & Engineering Technology Colleges*, 2013, American Society for Engineering Education: Washington, DC.
- [3] D. Figlio, M. Schapiro, K. Soter, “Are tenure track professors better teachers?,” *Review of Economics and Statistics*, vol. 97, pp. 715–724, 2015.
- [4] K. Lasfer, A. Pyster, “A review of non-tenure-track, full-time faculty at Systems Centric Systems Engineering (SCSE) programs,” 2012 ASEE Annual Conference, June 2012.
- [5] P. Umbach, “How effective are they? Exploring the impact of contingent faculty on undergraduate education” *The Review of Higher Education*, vol. 30, pp. 91–123, 2006.
- [6] A. Kezar, C. Sam, “Understanding non-tenure track faculty: New assumptions and theories for conceptualizing behavior,” *American Behavioral Scientist*, SAGE Publications, 2011.
- [7] J. Gappa, D. Leslie, *The Invisible Faculty. Improving the Status of Part-Timers in Higher Education*. ERIC, 1993.
- [8] S. Pirie, “Working toward a Design for Qualitative Research,” *Journal for Research in Mathematics Education*, pp. 79–177, 1997.
- [9] Borrego, M., Douglas, E. P. and Amelink, C. T. (2009), *Quantitative, Qualitative, and Mixed Research Methods in Engineering Education*. Journal of Engineering Education
- [10] D. Turner, “Qualitative interview design: A practical guide for novice investigators,” *The Qualitative Report*, vol. 15, pp. 754–760, 2010.
- [11] Meyer, M. and Marx, S. (2014), *Engineering Dropouts: A Qualitative Examination of Why Undergraduates Leave Engineering*. Journal of Engineering Education
- [12] Foor, C. E., Walden, S. E. and Trytten, D. A. (2007), “I Wish that I Belonged More in this Whole Engineering Group:” *Achieving Individual Diversity*. Journal of Engineering Education