Midlife career transitions of male scientists and engineers

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Abstract

This article summarizes the results of a qualitative study of career-transition experiences of male scientists and engineers in the current socioeconomic environment. The participants were selected from research and development organizations, industry, and academic fields in the United States. Examples of career transitions are job reassignment, relocation, being laid off, leaving the corporate world to become a consultant or establish own business, and taking an early retirement. The study addresses the challenges these professionals faced and the impact of these challenges from psychosocial perspectives. A narrative approach was used to collect data from 12 male scientists and engineers. The data was then analyzed using a grounded theory approach. Helpful strategies for a successful career transition were found to be self-efficacy, resilience, optimism, adaptation, and flexibility. The major factors that describe the dynamics in the career transition experiences were identified to be personhood, relationship, lifestyle, workplace environment, and corporate culture. The findings and their implications are discussed in reference to developing appropriate counseling strategies for this population. Coping skills are described to support the tasks of reappraising the past, modifying the structure, and completing the transition process as a life-enhancing transformation. These strategies are useful for helping recognize midlife transitions as both developmental crises and opportunities for scientist and engineers.

Significance and Objectives of the Research

Scientists and engineers in different fields often experience a variety of changes over their career lives. These changes may include corporate reorganization, shifts in program content or priority, funding reduction or termination, adaptation of new or alternative technologies, corporate downsize, merging, acquisitions, and even layoffs (Canaff & Wright 2004). The impact they have can be particularly severe for middle-aged men who have been in the profession for many years (Evetts 1996). Consequently, the challenges associated with a career change might result in psychological and physiological stress that could adversely affect quality of life and job performance, and ultimately hurt the workplace regarding efficiency, productivity, and stability (Uchitelle 2006). The purpose of this research is to help mental health professionals and career counselors to better understand career-related concerns and outcomes from midlife transitions so that effective counseling and support could be provided to serve this population.

Research Method

A qualitative research design based on narrative and grounded theories (Minichiello, Sullivan, Greenwood, & Axford 2004) was used to accomplish this project. After reviewing the existing literature on related topics, participants were selected by contacting male scientists and engineers who worked at research institutions, industrial facilities, and academic institutions in the United States. In selecting the research participants, attention was paid to ensure that a diverse population of scientists and engineers from different disciplines, workplace settings, career experiences, and different geographical locations were invited to participate so that the requirement of maximal variation sampling was met (Creswell 2002).

Data was collected by face-to-face interviews with the participants. The focal areas of the interviews included individual experiences of career transition and the impact of these changes on their vocational life, mental health, marital relationship, family life, etc. (Polkinghorne 2005). The data collection process consisted of two in-depth interviews. Each interview generally lasted from 60 to 120 minutes. During the first

interview, general questions were asked about
the participant's background, including family history, childhood development, education, career experience, and significant events in terms of vocational and family life. The purpose of the second interview was to gain insight into the participant's midlife career transition experience and obtain information regarding psychological and socioeconomic impacts of career transitions. After each interview, the recorded session was transcribed and subsequently coded and analyzed for key themes important for understanding and describing midlife job transitions. The themes that emerged from the analyses were then structured into categories as components for possible theories resulting from the research (Morrow 2007). These theories could be used by individuals to better cope with career transitions and for employers or counselors to improve support to the employees who undergo changes (Silverstein, Auerbach, & Levant 2006). This process is illustrated in Figure 1.

There were no noticeable risks to participants regarding physical or emotional harm in this study. Interviews were conducted in a private room with the collected information held in confidence. Participants were given the freedom to withdraw from the study if they wished to do so. This project has been approved by the Human Research Ethics Committee of the University of New England (Approval No. HE06/016).

During the process of this qualitative research, a conscious effort was made to assure that the trustworthiness and conformability of the results were established. Due attention was paid to achieving the validity such as *credibility* (confidence that the researcher has provided a credible interpretation of the meaning of the data); *authenticity* (the interpretation and commentary reflects the experiences as lived by the participants); *criticality* (the presence of transparency, reflexivity, and critical analysis in the research); and *integrity* (of process that ensures that checks and balances are present in the research) (Whittemore, Chase & Mandle 2001).

All participants were extremely open, cooperative, honest, and enthusiastic to share their career transition experiences during both triumphant and calamitous moments. There were, however, some emotional moments when a participant reflected on his traumatic experience.
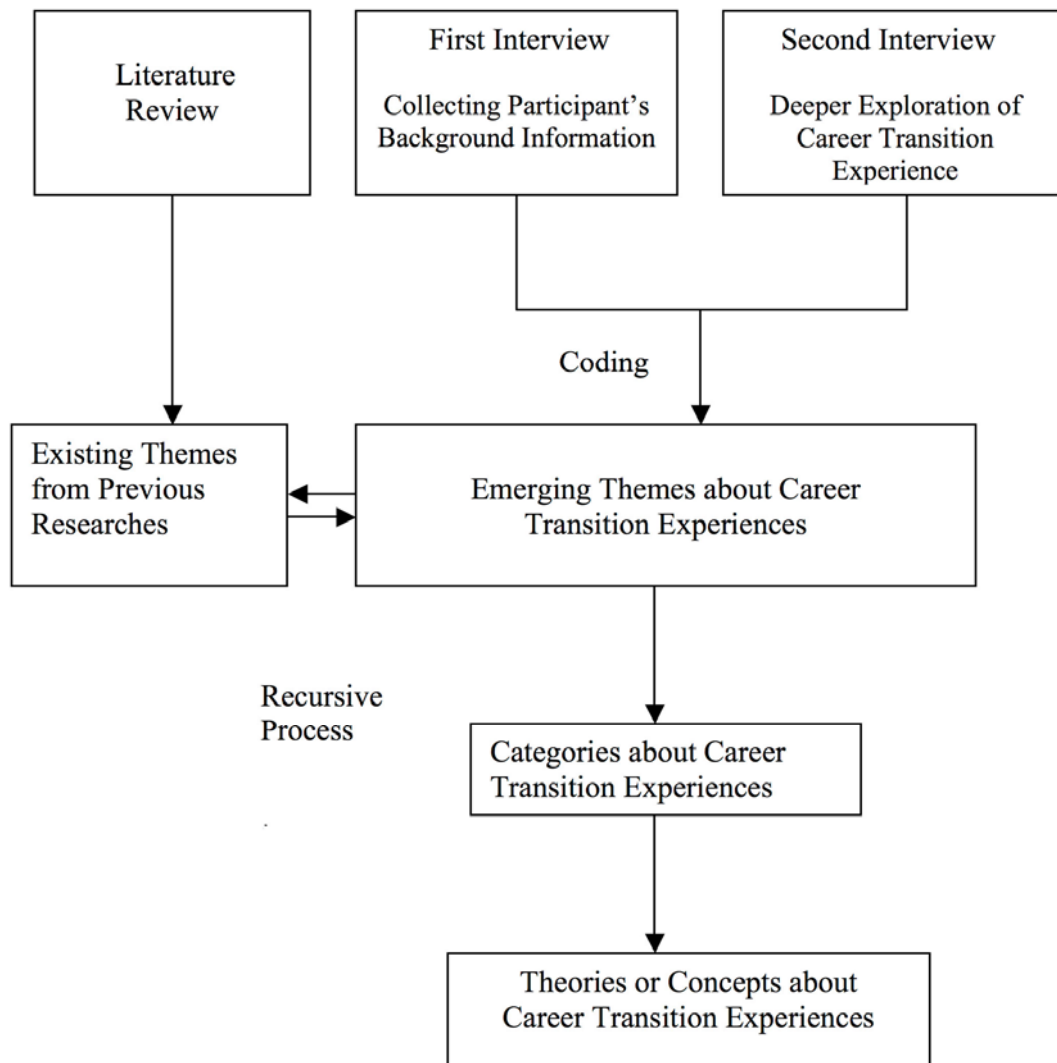
Figure 1: Diagram of Research Process

Research Findings

The findings of this study show several major types of career transitions for scientists and engineers. The scenarios include leaving the original organization for a new opportunity, becoming a consultant, becoming an independent businessman, or transferring to an overseas assignment. Other transitions could be forced exit from the profession or retirement.

Transition Out of the Organization

The data indicated both positive and negative circumstances for people to leave the original organization for a new opportunity. The most common positive situation is to seize a new opportunity outside the organization. In an era of rapid technological advancement in many fields and frequent market shifts and corporate restructuring, the layoff of employees has been a major factor for terminating a career (Grunberg, Moore, & Greenberg 2001). A more harsh reason for leaving the organization is being fired from the job. Leaving the job due to sickness or disability is another difficult circumstance in terminating a career. Franz, a nuclear engineer, talked emotionally about his forced retirement during the interview:

> "While I was working at a power company in Nebraska, I was diagnosed with Parkinson's disease. I took this incident seriously because it happened completely contrary to my original plan to use my expertise and experience for five more years

until I became 68 years old. I had been healthy
all my life. It was a serious blow to me, spiritually and mentally."

Becoming a Consultant

Very often, engineers and scientists leave the corporate life and establish their own consulting firm by using their expertise and experience that they have gained over the years. Some of their new clients had been previous customers. Bob, a power plant construction general manager, described his experience in establishing and operating a consulting firm:

I established my own consulting firm using my expertise and experience in technical, business, and legal areas after working for large utility companies for over 30 years. I enjoyed ten years of a successful consulting business in legal allegation and settlement cases between major companies and their customers by offering competitive charge rates and quality work. I found the effort very rewarding both vocationally and financially."

Becoming an Independent Businessman

Becoming an independent business owner is the dream of many ambitious and highly motivated people. The transition starts with finding a niche while working for a corporation. Then the individual develops a business plan, raises the venture capital, recruits the staff, and establishes the business. The process is often demanding and can carry financial and psychological/emotional risks. Thomas is one of the entrepreneurs. He revealed his experience:

"The required strategies for overcoming the risk at the beginning and maintaining a lasting success include finding a niche, mastering the technology, forging a business plan that comprises venture capital investment, product design, manufacturing facility, marketing strategy, and hard work. The process is highly demanding and extremely risky and stressful."

Working Overseas

Due to the expansion of international trade and globalization of the economy and technology in recent decades, overseas assignments often provide scientists and engineers with new opportunities to advance their careers. However, a job assignment in a foreign country brings both opportunities and challenges for people who are willing to work in a new environment with drastic lifestyle changes, cultural differences, and unfamiliar ways of doing business. James is such a technical manager who became an overseas marketing director. He recalled his transition experience:

"The attraction was that it is a whole new world out there." I went to Japan and became 'Mr. C-E' to represent the company. The new assignment was an exciting challenge for me and my family. I had to learn how to market products and services in Asia and to adapt to extensive traveling and changes in my daily routine. This drastic transition had great psychological impacts on my wife and school-age children living in a new environment and culture. The work pressure, the frequent traveling, and the grueling business activities made me anxious and frustrated, and I lost a lot of weight."

Retirement

This study found a variety of transition scenarios after the formal retirement. They ranged from early retirement, involuntary retirement, continuing work in the same field on an hourly basis, taking an academic teaching position, switching to a new field, volunteering in religious or community services, to grandparenting.

Some retirees use the time after retirement to explore a new career field by pursuing a different profession and receiving additional education and training. Many of the retired scientists and engineers enjoy volunteer activities in church and community services. Arthur is such a person. He described his activities as follows:

"I am very active in my church; I like taking care of the properties, facilitating decision-making, and building houses for low-income people."

Psychological Impact of Career Transition

Career transitions often have profound impacts on a professional's psychological and social status, relationships within the family, physical health and well-being, and life style (Jokisaari 2003; Miller 2007). It may trigger positive developments such as new opportunities, growth, and advancement in a career path. These positive changes could lead to new opportunities for increased responsibilities, higher visibility, and autonomy for achieving a higher level of success. On the other hand, involuntary changes may result in negative consequences, such as demotion, relocation, layoff, or firing. These negative changes frequently cause disruption in one's professional advancement, emotional distress, financial difficulty, eroded self-esteem, and lost identity. The negative consequences may damage relationships, family life, and quality of life. Glenn recalled his experience after being laid off:

"During the months I was laid off, my wife and I had just moved into a new house, and we had not made the first mortgage payment yet. Then when we found out that my wife was pregnant, we were very scared of what was the next to do. I was scared to death."

Dynamics in Career Transition Experiences – *Personhood, Relationships, Lifestyle, and Workplace Environment*

The major elements of psychosocial dynamics in the study of career transition experiences were found to be personhood (Glas 2006), relationships, lifestyle, and workplace environment. These components characterize the uniqueness of an individual, his interaction with the people around him, the way his lives his life, and how he behaves in his work environment. Among the four factors, personhood is the primary determining factor that shapes an individual's career choice, career development, and career transition experiences. It also determines the relationships he wants to maintain at home, at the workplace, and in society (Schulthesis 2003). Conversely, the lifestyle chosen by an individual reflects his personhood. Lifestyle includes one's professional identity, social role, financial status, opportunities of recreation, and family life (Stoltz 2007). The workplace environment includes corporate culture as identified by its mission statement, values and goals, ethics code, traditions of the organization, communication styles (open or closed), formality of dress code, and organizational structure (Caldwell, Herold & Fedor 2004). These factors determine whether the employees can be happy and feel that their work is satisfying and rewarding. During times of career transition, personhood, relationships, lifestyles, and workplace environment interact among themselves, resulting in the outcome of the transition process. The outcome could be either positive or negative. For negative consequences, coping skills and counseling may be needed. Figure 2 illustrates the dynamics of the four factors during a career transition.
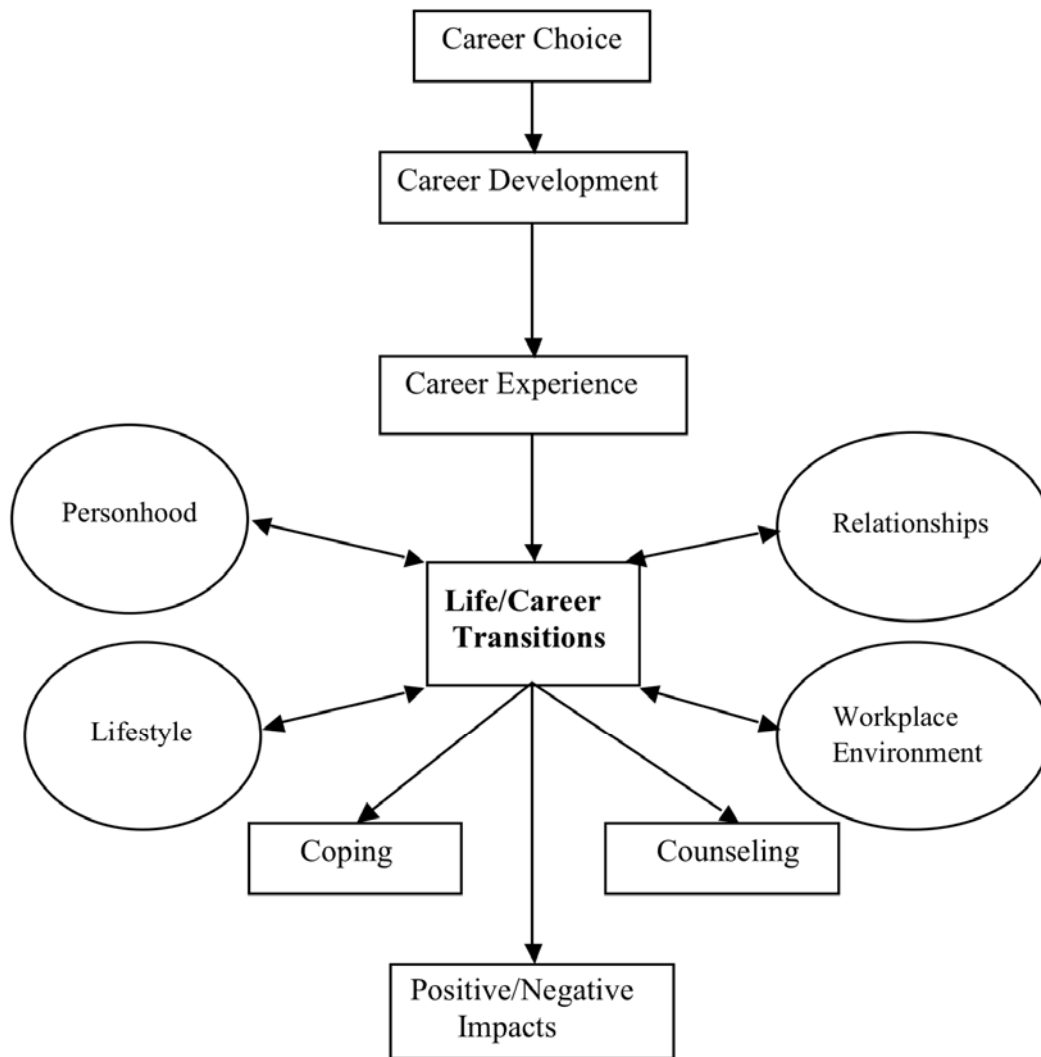
Career Choice

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Career Development

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Career Experience

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Personhood

Relationships

Life/Career Transitions

Lifestyle

Workplace Environment

Coping

Counseling

Positive/Negative Impacts

Figure 2: Conceptual Configuration of the Study of Career Transitions

Reflections on Career Transition Experiences

By studying the career transition experiences of the research participants, the following implications can be made.

Unfinished Business

Unfinished business can be interpreted in a broad sense as unattained goals, regrets, and unresolved emotional issues in an individual's past. These past events or incidents could be associated with education, work, relationships, or family affairs. They could lead to negative ruminations, harmful brooding, and psychological distress; and subsequently, they could erode mental well-being and cause somatic symptoms. Many examples of unfinished business can be examined in terms of their impacts on the participants' lives. These incidents included unfinished college degrees, unattained academic tenures, uncompleted engineering or research projects, eliminated job positions, or unused talents. Even more detrimental were difficulties in finding a new job, being laid off or fired from work, and forced early retirement.

Coping

The participants used different means and strategies to cope with the psychological impacts of transition events. These means and strategies included a positive attitude, a resilient mentality, and emotional strength. Some of the research participants found that it was also helpful to engage in recreation and hobby activities to balance work-related stress with family life.

Support

Several of the research participants reported the importance of the support their spouses provided to make their careers successful and their job transition a positive experience (Gerstman 2004). The spouse often has to deal with her husband's demanding working schedule, frequent travel, emotional stress, and physical exhaustion. She also faces her husband's diminished time with the family and his inability to share household chores and responsibilities in child rearing and education. In addition to the spouse, other family members, friends, and coworkers could provide support during difficult career transitions.

Retrospections

During interviews with the research participants, they voiced their reflections and interpretations for some of their career transition experiences, both in positive and negative terms. The positive experiences were stories of job satisfaction, fulfillment of career goals, contribution in a new field, discovery and development of a new technology, solving of a critical technical problem, an achievement beyond expectations, and survival from a business downturn. The negative aspects include failure, disappointment, frustration, and regrets.

Discussion

Several important aspects of this study are discussed in this section. They include a review of the socio-economic and technological context in which this study was conducted, the contributions of the current research work, limitations of this study, and suggestions for future research.

Contextual View of the Current Study

With increasing economic globalization and growing competition in a technologically fast-moving market, the companies frequently perform continuous downsizing, layoffs, and out-sourcing that leave the workers in a treacherous minefield where they struggle for survival. The challenges are not restricted to finding another job, but often involve

financial hardship, downgrade of lifestyle,
strained relationships, lost self-identity and self-esteem, and deteriorated physical and
psychological well-being (Simmelink 2004). It was in this context that the current study
was conducted. The findings of this study may contribute to understanding the
importance of counseling services to this specific population and help construct
strategies to provide assistance and support to technical professionals in transition.

Contribution of the Research

The first unique nature of this study is related to its timing. It was carried out at a time in
which the study of the so-called baby boomer generation was a popular topic for many
sociologists, psychologists, health care institutions, government policy makers,
economists, and business owners, and service organizations. The baby boomer
generation is defined as people who were born after WWII, from 1946 to 1964. Their
ages as of 2008 range from 44 to 62. They make up about one third of the population
in the United States, approximately 78 million people (U.S. Census Bureau 2005). The
younger ones in this group are now in their middle age, and the older ones are
approaching their retirement age. Most of the research participants in this study are in
the baby boomer generation, but a few of them have past that age group.

For several reasons, the baby boomer generation is recognized as the most influential
population in the United States in many aspects. They are usually better educated than
previous generations. They are hard-working, committed to social issues, and skeptical
of authority and conformity. They look for changes and reforms, they value service, and
they honor responsibility. They also value individuality, self-expression, youthfulness,
and entitlement. They are moved by spirituality and are aware of the need for
transformation during their life span (Predelgast 2005). All these characteristics and
attributes play an important role in their career choices, career development, career
experiences, and ultimately career transitions. With the aging of the baby boomer
generation, new perspectives of working experiences and retirement lifestyles are
emerging. These aspects include spirituality, quality of life, and personal well-being.
They become the most important issues for this group of the population. From the
psychosocial point of view, their self-identity, meaning of life and values determine their
choice of new directions (Schlossberg 2004). This study addresses the issues
associated with the baby boomer generation. The findings in this study can contribute
to counseling strategies that effectively support this group of the population.

The second important aspect is that this study targeted a population whose career
experiences were exposed to accelerated socio-economic, technological, and industrial
transformations in the workplace. As previously mentioned, these career transitions
occurred in the nuclear age and the computer era when industries experienced
accelerated modernization, and technologies advanced at an unprecedented fast pace.
Facing economic globalization and increased international competition, business
organizations and industrial structures experienced drastic and continual changes. In
the governmental sector, policies and project funding priorities changed frequently.
Further, dwindling natural resources and increasing awareness of the need for
environmental protection have resulted in drastic changes in the ways industries do
business, locate resources, and provide products and services in this new
environment. The findings of this study could be, therefore, useful not only in providing
counseling and support, but also helpful for policy makers in both private sector and
government organizations.

Limitations of the Study and Future Research Topics

Two limitations of this study are significant. One limitation is that it includes only
mainstream American workers. In recent decades, there has been a transfusion of
foreign-born scientists and engineers into the United States to support the nation's
economic growth and development. The foreign-born technical professionals have
become an important part of the workforce. They contribute their talents and skills to
the national economy and at the same time experience challenges and difficulties that
their mainstream American counterparts usually do not face. These issues include

different relationships and communication styles, mistrust from the company, discrimination from colleagues and management, resulting in fewer opportunities for promotion. In addition, there might be disadvantages in receiving compensation, job security, and the obstacles of glass ceilings in corporate hierarchy. Because of the large proportion of foreign-born scientists and engineers, research on career transition experiences needs to be expanded to include this population. Interesting topics for investigation are, for example, acculturation, assimilation, and integration into the workplace and in society. In a greater depth, the effects of differences in culture, beliefs, and styles in interpersonal relationships on career transition experiences need to be studied to facilitate understanding the challenges this population faces so that effective guidance and help for coping and counseling can be provided.

The second limitation of this study is the exclusion of female scientists and engineers. According to the U.S. Census Bureau (2005), women comprised 39% of scientists and nearly 13% of engineers. Therefore, career transitions of women technical professionals need to be studied. In contrast to their male counterparts, female workers in science and engineering fields often have additional workplace-related issues and family-related challenges. Among these are paternalism and sexual harassment, hostility toward women workers, job commitment, different styles of communication, and glass ceilings (Hultin 2003) in an organization, managing both work and family responsibilities as a wife and mother, and dealing with relocation (National Academy of Engineering 2008). These issues need to be addressed in future studies.

Conclusion

This study was conducted by using a narrative story-telling approach to collect career transition experiences of 12 male research participants in science and engineering fields. The process was a life-reliving experience for each of the informants during a process of deep exploration, reflection, interpretation, and meaning-making.

The ultimate contribution of this research will be measured by its value in helping the career counseling practice, especially for middle-aged male scientists and engineers, during their career transition processes. As the findings indicate, the transition plays out in a complex contextual environment in which personhood, relationships, lifestyle, and workplace environment interact with each other to determine the outcome of the event. Based on the understanding of this paradigm, the counseling intervention and support must include the aspects in all four components to provide effective assistance to the individuals experiencing transition challenges.

From a practical viewpoint of career counseling, the results of this study should be evaluated and used to link existing information to research findings to counseling strategies for professionals undergoing career transitions in other fields of practice. The application should not be limited to counseling individuals to cope with their short-term challenges, but more importantly, it should be expanded to work with them to devise long-term goals and action plans for the next stage of a successful career.

Acknowledgements

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