AC 2009-1716: SABBATICALS AND ACADEMIC LEAVES: AN INVESTMENT IN YOUR FUTURE!

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Sabbatical and Academic Leaves – An Investment in Your Future!

Abstract

Taking a sabbatical or academic leave is becoming less popular owing to the problems associated with dual income families and the need to keep research programs running. This paper advances strong arguments for fitting well-timed leaves into one's long-range academic plans. The author has taken four sabbaticals and four academic leaves during the 37 years of his full-time academic career and has had four extended visiting faculty appointments since his retirement. His experience has included appointments at one U.S. and nine foreign universities, the National Science Foundation and two multinational companies. This paper will discuss the advantages of taking sabbatical and academic leaves to one's teaching, research, cultural, and personal development. Examples will be given on how a leave experience made an irrevocably positive difference in the author's teaching. Information also will be given on how to plan for a leave. In particular, this paper will discuss possible sources of funding for a leave. The author will also discuss how one can handle keeping an active research program going while on leave. Suggestions will also be given on how to involve one's family in the leave experience. The main thrust of this paper is the important point that taking a sabbatical or academic leave is an investment in your future that will pay wonderful and unforeseen benefits.

1. Introduction

Some relatively long phrases and proper nouns are used rather often in this paper. Hence, the author has elected to use several acronyms and abbreviations that are defined in Table 1.

The principal thrust of this paper is to encourage readers to consider taking a sabbatical or academic leave (SAL) as a sound investment in their professional future. Most colleges and universities allow faculty to take a sabbatical leave (SL) after six years of full-time service in a tenure-track position. Typical financial provisions for a SL are 50% of one's annual salary that can be taken over a semester or the entire academic year. Appropriately, SLs count towards one's years of service on the faculty. Academic leaves (ALs) can be taken at any time pending appropriate administrative approval. No financial assistance is usually provided by the college or university for an AL. Moreover, time spent on an AL usually does not count towards one's years of service on the faculty.

In view of these limitations as well as the challenges to plan and undertake a SAL with due consideration for one's family, it is not surprising that fewer faculty are electing to take advantage of SAL opportunities. The focus of this article is to address the Why, When, Where, What, and How of taking a SAL.

This paper is organized as follows. It is appropriate to begin with a summary of the author's qualifications to address this neglected topic of SALs. We then address the Why, When, Where, What, and How of taking a SAL. We end with a prognosis of what well-planned SALs can do for your professional future.

Table 1: List of Acronyms and Abbreviations

Acronym or Abbreviation	Definition
AAAS	American Association for the Advancement of Science
AL	Academic Leave
ANU	Australian National University
ATU	Aachen Technical University
GOALI	Grant Opportunities for Academic Liaison with Industry
IIS	Indian Institute of Science
ITU	Istanbul Technical University
I/U CRC	Industry/University Cooperative Research Center
MAST	Membrane Applied Science and Technology
NATO	North Atlantic Treaty Organization
NSF	National Science Foundation
NTU	Nanyang Technological University
NUS	National University of Singapore
OISE	Office of International Science and Engineering
SAL	Sabbatical or Academic Leave
SL	Sabbatical Leave
VFA	Visiting Faculty Appointment

2. Qualifications of the Author

The author entered academia in 1968 and held a full-time faculty position at the University of Colorado until he retired in 2000. He then accepted a full-time faculty position at the University of Cincinnati until he retired again in 2005. He took four SLs and two ALs during his 32 years at Colorado and had two ALs while at Cincinnati. These SALs involved appointments at other universities, government service, and in industry. The When, Where, What, Why, and How of these SALs are summarized in Table 2. The particular benefits acrued to the author and his family from these SALs are discussed in the subsequent sections of this paper.

In addition to the appointments in Table 2, the author gained considerable experience while serving from 1977-80 on the Middle East Area Advisory Committee for the U.S. Council for the International Exchange of Scholars that administers the Fulbright Fellowship Program. He also gained invaluable knowledge at the National Science Foundation (NSF) during 1977-78 via interaction with their Division of International Programs (now the Office of International Science and Engineering – OISE) that is responsible for a variety of programs that provide funding for international collaborative research and educational activities.

3. Why Consider Taking a SAL?

In this section we will consider five facets of the Why question: (1) Taking care of Number 1!; (2) What's in it for your entire family; (3) The value to your college or university; (4) The value to your host; and (5) The value to our country.

Table 2: The When, Where, What, Why and How of the Qualifications of the Author

When?	Where?	What?	Why?	How?
1974-75	ITU, Istanbul Turkey	SL – Dept. Chem. Eng.	Teaching/designing undergrad lab	Fulbright
1975	Univ. of Essex, Colchester England	SL – Fluid Mechanics Res. Inst.	Research	NSF-NATO
1977-78	NSF, Washington DC	AL – Program Director	Service & administration	NSF
1981-82	ATU, West Germany	SL – Metallurgical Inst.	Research	Fulbright
1985	Notre Dame Univ., South Bend IN	AL – Dept. Chem. Eng.	Invitation to teach & lecture	Endowed Chair
1988-89	Oxford Univ., Oxford England	SL – Mathematical Inst.	Research & study mathematics	Guggenheim & Fulbright
1989	IIS, Bangalore, India	SL – Dept. Chem. Eng.	Research & lecturing	Guggenheim
1995-96	Univ. of Twente, Enschede NL	SL – Center for Membrane Sci. & Tech.	Research & lecturing	SL support
1996	Chevron R&D, Richmond CA	SL – R&D Center	Gain industry experience	NSF GOALI
1996	The 3M Company, St. Paul MN	SL – R&D Center	Gain industry experience	NSF GOALI
2004	NTU, Singapore	AL – Inst. Environmental Sci. Eng.	Research	VFA
2004	ANU, Canberra Australia	AL – School of Chemistry	Research	VFA
2005	NTU, Singapore	AL – Inst. Environmental Sci. Eng.	Research	VFA
2005	ANU, Canberra Australia	AL – Dept. Applied Mathematics	Research	VFA
2006	NUS, Singapore	VFA – Dept. Chem. & Biomolecular Eng.	Teaching, research, & writing book	Endowed Chair
2007	NUS, Singapore	VFA – Dept. Chem. & Biomolecular. Eng.	Teaching, research, & writing book	Endowed Chair
2008	NUS, Singapore	VFA – Dept. Chem. & Biomolecular Eng.	Teaching & research	Endowed Chair
2009	NTU, Singapore	VFA – Singapore Membrane Tech. Center	Research & program direction	VFA

3a. Taking Care of Number 1!

In the author's opinion you owe it to yourself to take a SAL for many reasons. First, a SAL will be a milestone in your career to assess its future direction. The author's experience at NSF in 1977-78 was pivotal in shifting his research from energy into membrane science and technology.

A SAL can provide access to unique research opportunities and facilities. For example, the author's SL at Aachen Technical University (ATU) in 1981-82 allowed him and two of his graduate students to have access to the world's deepest test of underground coal gasification that was being carried out in Tulin Belgium at the time.

A SAL is also an opportunity to acquire new skills. The author's SL in the Mathematical Institute at Oxford in 1988-89 allowed him to study the advanced mathematics he needed to address his research interests in geophysical self-organization. His SL at the University of Twente in The Netherlands in 1995-96 allowed him to observe the organizational structure of their Center for Membrane Science and Technology that was invaluable in his position as Co-Director of the Membrane Applied Science and Technology (MAST) Center at Colorado, an NSF Industry/University Cooperative Research Center (I/U CRC).

A SAL also provides time to gather one's thoughts to do creative writing. While on a visiting faculty appointment (VFA) at the National University of Singapore (NUS) in 2006 and 2007, the author finished writing his book on *Scaling Analysis in Modeling Transport and Reaction Processes*[1].

A SAL at another academic institution provides a good opportunity to recruit students for one's research program. The author has brought many students to the U.S. to pursue graduate studies not only in his research program but at many other universities as well. Moreover, he has used the contacts he made during his SALs to create opportunities for U.S. students to have an international technical/cultural experience.

Capitalizing on taking a SAL also allows one to experience different approaches to teaching and learning. While at Istanbul Technical University (ITU) in Turkey during 1974-75, the author had to teach through an interpretor to students, most of whom could not speak English. This experience helped the author to greatly improve the organization of his course materials and to avoid rambling during his lectures. The thought-provoking morning and afternoon tea and coffee sessions while the author was at the University of Essex in 1975 and at Oxford in 1988-89 made him realize how important it is to stimulate students to think beyond the narrow confines of their own research.

On the non-technical side, a SAL is a window through which one can view another culture in depth. Spending a SL in West Germany in 1981-82 gave the author the chance to see both sides of the Berlin wall, thanks to the wonderful cultural complement provided by the Fulbright Program. The author's recent series of ALs and VFAs in Singapore put him at the gateway to Asia and the exciting developments in the Pacific Basin. Although it has been said many times, it is worth saying again – experiencing another culture is the most effective way to better understand one's own culture!

Using a SAL to have an international experience is an excellent way to enhance and acquire new language skills. The author learned to speak Turkish during his 1974-75 SL in Turkey and significantly improved his German during his 1981-82 SL in West Germany.

Do not underestimate the value of a SAL to your family. Indeed, a SAL is an experience for the entire family. All members of the family must work together, irrespective of age, to plan and make the SAL work so that it is a worthwhile an enjoyable experence for all concerned. Working together to make it happen is a unique family bonding experience. More will be said about this in Section 3b.

Another tangible benefit of a SAL is the relaxation provided by being relieved of the many pressures of the academic life. In particular, one gets a reprieve from the many committees in which we all get involved!

An invaluable benefit of SALs is the enhancement in one's qualifications that they make possible. The ability to adapt to another culture and to cope with different educational systems qualifies one for future appointments, particularly after retirement. This topic will be discussed in more depth in Section 8.

3b. What's in It for Your Family?

Some faculty might think that accommodating their family is problematic in taking a SAL. However, the opposite is quite true – SALs can greatly benefit everyone in your family. A SAL has to be an experience for one's entire family that begins with the planning and then continues with the daily accommodation to new surroundings, educational systems, culture, climate, etc. Evening meals for the author's family often involved discussing the interesting aspects of adapting to these new experiences.

Do not think that your spouse cannot also get very much involved in the SL experience. When the author took his first SL at ITU in Turkey during 1974-75, his wife, whose degrees were in mathematics (B.A.) and education (M.A.), was offered the opportunity to teach English as a Foreign Language to the staff at the Istanbul Hilton Hotel. This provided an opportunity for her to make new friends and also to learn Turkish more quickly.

Living in a foreign country can provide excellent motivation for children to rapidly develop their language skills. During the author's second SL at ATU in West Germany, his five-year old daughter went to kindergarten and quickly learned to speak German. Little did we know that this planted the seed for her future interest in foreign languages. During his third SL at Oxford in 1988-89, his daughter, then aged 12, attended a private school whose educational standards were different from those in the U.S. She was required to take a classical and a modern language and chose Latin and French. She later became fluent in Spanish during her college years (while majoring in mathematics!).

Experiencing another culture is invaluable for one's children. Exposing them to another culture helps to cultivate their interest in history, languages, sociology, political science, architecture, and the visual and performing arts. During the author's SL at Oxford his twelve-year old daughter had to miss three months of school. However, this did not cause her to fall behind in her studies. Rather, experiencing foreign travel and other cultures enhanced her interest in school so that she surged ahead in her studies.

3c. The Value to Your College or University

Clearly if you are successful in being awarded a prestigious fellowship such as a Fulbright or Guggenheim, it brings considerable recognition to your college or university. Your appointment at another institution establishes bridges between your host and parent institutions that can help attract graduate students and visiting faculty to your campus. Clearly SALs catalyze interaction between colleges and universities that can lead to cooperative programs. For example, the two ALs that the author had at Nanyang Technological University (NTU) in 2004 and 2005 have catalyzed cooperation between the membrane centers in Singapore and Colorado. The new skills and research direction that you gain from a SAL will enhance your contributions to your college and university. The AL that the author had at NSF made him an excellent resource in helping faculty at Colorado write successful research proposals. Likewise the experience he gained via three Fulbright Fellowships was invaluable in helping his faculty colleagues compete successfully for these awards.

3d. The Value to Your Host

The author would be remiss if he did not also tout the benefits of your contributions to the SAL host. A meaningful example is drawn from the author's SL in Turkey in 1974, which was his first trip abroad. The author charged into his appointment at ITU with all the enthusiasm, idealism, and energy so characteristic of young faculty. However, the author was totally unprepared to cope with the realities of teaching in a developing country. At the time it seemed that ITU had somewhat of a kismet philosophy for academic planning. The start of the academic year was delayed by more than two months for reasons that were never made clear. Once the semester began, the author could not get any clear indication of when it would end and final examinations would be scheduled! One of the assignments given to the author was to design the unit operations laboratory for the newly constructed chemical engineering building. Little did he know that this included specifying the electrical power requirements for the entire building! Indeed, the building had been built without any electrical power of any kind! Undaunted but considerably challenged, the author coordinated getting the job done. A lack of planning permeated just about everything the author tried to do. His attempt to set up a weekly seminar program met with total failure. At the end of nine months, the author sincerely believed that his time at ITU was a total waste insofar as contributing anything to the University. However, the bridges that he unknowingly had built between ITU and Colorado led to several bidirectional faculty visits and to a colleague in his Department being awarded a Fulbright Fellowship to Turkey. In addition, the author was instrumental in creating a pipeline for Turkish students to come to universities in the U.S. for graduate studies. It is with great pride that the author is now witness to seeing two of these students serving on the faculty at ITU, one of whom has served as the Department Head and Dean of Engineering!

3e. The Value to Your Country

It might seem a bit melodramatic to include the potential value of SALs to your country. Yet, the author sincerely believes that world understanding is the prelude to securing world peace. In particular, the scholars of our country must make an effort to better understand other cultures and to share our culture. International SALs are an excellent forum for achieving this. The author has

to believe that the many bi-directional visits of well-educated peoples between the U.S. and Soviet Union were a necessary prelude to the collapse of the Iron Curtain.

Spending a SAL as an administrator at a government agency can have a considerable impact on one's profession and the health of science and engineering in our country. While the author was on an AL as a Program Director at NSF in 1977-78, he was instrumental in laying the foundations for a new program in Separation and Purification Processes and a new Bioengineering Division. This program and division still exist in some form (although under different names) at NSF today. It is very satisfying to view one's contributions on the national scene – clearly they are integral to one's professional legacy.

4. When Should One Consider Taking a SAL?

4a. As Soon as Possible!

The flippant answer to this question is "As soon as possible after earning tenure!" The author has never passed up an opportunity to take a SL. Moreover, he has sandwiched in several ALs between his SLs. Taking a SAL shortly after earning tenure is important in that it provides the time needed to chart the future direction of your career. The author's first SL, during which he had to teach via an interpreter, convinced him that he needed to put more time into organizing his course materials and in particular to avoid rambling during his lectures. This SL provided the time he needed to make the decision to shift the direction of his research from fundamental fluid mechanics into a more pragmatic thrust in synfuels.

4b. Capitalizing on Interesting and Sometimes Unexpected Opportunities

Another time to take a SAL is when interesting unexpected opportunities arise. One has to have some confidence in serendipity. Indeed, the author's first faculty appointment at NTU in Singapore in 2004 was the result of a failed AL plan to spend some time at an industry sponsor of the MAST Center at Colorado whose research facilities were in Singapore. The company fell on hard times and needed to cancel their commitment to host the author for a semester. However, they offered to intercede with NTU to set up an alternative appointment. The financial provisions of the resulting NTU appointment were quite modest and did not cover the author's full expenses. Serendipitously, this initial appointment led to five years of long-term visits to both NTU and NUS that continue yet today with very generous provisions!

Yet another 'busted' SL plan involved spending a semester in The Netherlands at another industry sponsor of the MAST Center at Colorado. This was to be supported in part by the company and in part by an NSF Grant Opportunities for Academic Liaison with Industry (GOALI) award. The author learned after he had relocated to The Netherlands that the company could not support him for his intended SL. Rather than abandon his plans for a SL in industry, the author capitalized on an opportunity to spend a semester divided between two other sponsors of the MAST Center, namely Chevron R&D and the 3M Company. This led to a successful patent but more importantly it gave the author an enhanced understanding of the industry environment that greatly aided his teaching of both undergraduate and graduate courses.

4c. When Your Research or Teaching Demands It

In the late 70s the author and several of his students were involved in developing underground coal gasification as a technology for accessing deep or low rank reserves. The world's deepest test of this technology was planned for 1981-82 in Tulin Belgium. The author was able to make a convincing argument to obtain a Fulbright Fellowship as well as NSF and University of Colorado grants to support his SL and to take three of his graduate students to ATU that was involved in this cooperative European synfuels program. This was essential not only to advancing the author's research program but also provided an exceptional technical/cultural experience for his students.

Many faculty struggle with trying to write a book in their area of expertise and cannot find the time to get the job done. A SAL can provide the time for the dedicated focus required to write your book. The author had spent more than a year outlining his proposed book, but could not find the time to get much done on it. Two successive one-semester VFAs in 2006 and 2007 provided the time needed to finish it. Hence, the recommendation is to consider taking a SAL when your pedagogical efforts require some relatively uninterrupted extended period of time.

4d. When You Need to Acquire New Skills or Expertise

A SAL is a perfect forum for acquiring new skills or expertise. This is particularly needed when one is venturing into a new area of research. For example, in the 80s the author developed a keen interest in geophysical self-organization in connection with using this natural phenomenon as an indicator of global climate change. However, he soon got into problems that were beyond his mathematical skills. Hence, he wrote convincing proposals that led to Guggenheim and Fulbright Fellowships to study advanced mathematics at the Mathematical Institute at Oxford. This was a highly successful endeavor that led to six peer-reviewed and five symposium proceedings papers, and a multi-million dollar NSF grant to study "Biocomplexity Associated with Biogeochemical Cycles in Arctic Frost-Boil Ecosystems."

4e. When You Recognize a Unique Opportunity to Serve

Our engineering profession has been good to us. Hence, we have an obligation at some point in our careers to make a serious commitment to serve our profession. A SAL again provides a wonderful opportunity to do this. In 1977 the author was encouraged by the Dean's Office at Colorado to consider serving as a Program Director at NSF. The author decided to do this both as an opportunity to serve his profession as well as to gain administrative experience.

5. Where Should One Considering Going for a SAL?

5a. Geographical Considerations

The author's first recommendation here is "anyplace but where you are!" Some faculty take their SL at their own college or university. In doing so, they are passing up a wonderful opportunity to experience another part of the country or world. When the author was a young and inexperienced newly tenured Associate Professor, he elected to go to a developing country and teach his classes

through an interpreter. The rewards for this daring move have been discussed in Section 3a. Important geographical considerations relate to the availability of good schools for your children, health and safety conditions, foreign language needs, cultural amenities, and the degree of adjustment that will be required of you and your family. Clearly, taking a SAL in an English-speaking country is a much easier transition than adapting to a place where you will need to master a new language. Nonetheless, doing the latter could be a wonderful experience, especially for your children who undoubtedly will pick up languages faster than you will! With the 'flattening of the earth', the author has become very interested in learning more about Asia. Hence, for the past five years he has taken a series of ALs and VFAs in Singapore, where the first language is English but the culture is a blend of Chinese, Malay, Indian, and English. This gave the author considerable insight into the different learning culture that prevails in Asia. This knowledge has been invaluable to him in mentoring Asian students who are studying in the U.S.

Geographical considerations also relate to the sources of funding that are available. For example, the Fulbright Fellowship program is set up only with certain countries. Moreover, the Fulbright program places considerable value on both the cultural as well as the technical aspects of your proposed SAL. They do not look favorably on proposals that involve people returning to countries where they were born or where they have had appointments in the past. There are also special fellowships available in certain countries such as those given by the Alexander von Humboldt Foundation and the Deutsche Forschungsgemeinschaft in Germany. The availability of such awards can be an important consideration in determining where one elects to take a SAL.

5b. Academic, Industry or Government?

Most faculty associate a SAL with an appointment at another college or university. However, serious consideration needs to be given to spending a SAL in industry or in some government appointment. The author elected to take his first AL to serve as a Program Director at NSF. However, he waited 28 years before he took his first SL in industry. Waiting so long to do this indeed was a mistake since engineering educators need to have a first-hand experience in industry far sooner in their teaching careers in order to more effectively mentor their students. The value of spending a SAL in government such as at NSF is that it gives you an opportunity to see if you enjoy administrative work without having to make a long term commitment to it. It also puts you in a very visible position if indeed you are seeking an administrative position. The author was interviewed for several department chairmanships as a result of his one-year appointment at NSF. However, being at NSF convinced him that what he really enjoyed was teaching and research – knowing this for certain was a valuable outcome of this administrative appointment. The important message here is to consider all possibilities when planning a SAL.

6. What Should One Consider Doing During a SAL?

6a. Teaching and Lecturing

Teaching and lecturing at another college or university and in particular in another country can be a very rewarding experience. The author discussed in Section 3a how his teaching was greatly improved by teaching through an interpreter in Turkey. Sometimes one is given opportunities at another university that might not be afforded to them at their own college or university. When

the author was working on his book on *Scaling Analysis in Modeling Transport and Reaction Processes*[1], he never had a chance to teach a course focused exclusively on the subject of this book. Yet, he was given the opportunity to teach a course on scaling analysis during three consecutive VFAs at NUS in Singapore. Getting student feedback during this course greatly improved the content and organization of his book. Teaching in another country also sensitizes one to the different learning styles of students in other cultures. This greatly helps one more effectively mentor international students when returning to their college or university.

6b. Research

Many faculty are reluctant to take a SAL because they fear that it will hinder the progress of their research. However, a SAL can also help one make a 'quantum jump' in their research since it provides the opportunity to access unique facilities and acquire new skills. In Section 4d the author discussed how having the opportunity to study mathematics at Oxford helped him move into a new research area. The author's more recent ALs and VFAs at NTU and NUS have helped him focus his membrane research on water treatment since this is a major thrust in Singapore. In particular, NTU and NUS have access to unique pilot-scale water treatment facilities that are not available to the author in the U.S.

6c. Administration

Academia always has a need for well-qualified administrators. One should consider using a SAL to assume some temporary appointment that provides an opportunity to serve as an administrator. The author discussed the value of his appointment as a Program Director at NSF in Sections 3e and 5b. One aspect of his NSF appointment that the author has not discussed yet was the nature of his responsibilities. When he was invited to serve at NSF, he wanted to avoid administering a program in which he had an active research interest. Hence, he requested a program in which he had no past or current research interests. This made the job much easier since he could make decisions based on the best interests of advancing engineering science. However in doing this, the author did not realize that he was sowing the seeds of interest that would bear fruit in the distant future. Several years later the author moved into the area of membrane research, for which he greatly increased funding while at NSF, just at the time when his research program in synfuels was dying – his administrative experience at NSF saved his research career! Hence, do not rule out using a SAL to gain administrative experience – it can yield unforeseen dividends!

7. How Should One Prepare for a SAL?

7a. Sources of Funding

Colleges and universities usually provide one semester's salary for a SL. If you elect to take a SL over the full academic year, it is usually necessary to find supplemental funds. These can be obtained from various domestic and international programs. The following is not intended to be an all-inclusive summary of funding sources. Rather, it will focus on the most broad-based and nonrestrictive programs.

By far, one of the most attractive sources of funding is a Fulbright Fellowship. This provides travel and salary support for appointments ranging from several months to one year in 65 countries. The value of a Fulbright is that it addresses both the cultural and technical aspects of your SAL. In particular, it has a well-coordinated cultural program for your entire family. During the author's Fulbrights in Turkey and Germany, his family enjoyed being hosted by the U.S. Ambassador to each of these countries. Moreover, you become a Fulbrighter for life as a member of the Fulbright Alumni Association. More information on the Fulbright Fellowship Program can be obtained from their website[2].

Guggenheim Fellowships also provide significant funding for your travel and salary support. However, this program is very competitive since relatively few awards are given in any one discipline. Unfortunately Guggenheim Fellowships have no formal cultural program in connection with the awards. More information on the Guggenheim Fellowship Program can be obtained from their website[3].

NSF also has several programs that provide funding for SALs. Some of these are focused on providing international technical/cultural experience for graduate students and hence provide funding to take some of them with you on a SAL. One should consult the website of OISE for up-to-date information on NSF's current programs[4]. The OISE works with all NSF programs to co-fund new awards and supplements for collaboration with foreign research partners and active research engagement of U.S. students.

If you are interested in a SAL in industry, consider the NSF GOALI program. The latter promotes a variety of university-industry partnerships. In particular, this program provides support for faculty to gain experience in an industrial setting. Prior to submitting a GOALI proposal, one should check with the Program Officer in the specific field of the proposed research for details regarding the availability of funds, submission dates, and turn-around time. More information is available on the NSF GOALI website[5].

The North Atlantic Treaty Organization (NATO) Science for Peace and Security Program offers grants to support collaboration between scientists in countries of the Euro-Atlantic Partnership Council and the Mediterranean Dialogue. The author and two of his professional colleagues just received one of these grants for collaborative research between Israel, Jordan, and the U.S. to develop a novel technology for desalinating brackish water. This research will involve pilot-scale tests in Jordan along with bidirectional visits of faculty and graduate students. More information on the NATO Science for Peace and Security Program can be obtained from their website[6].

If you are interested in gaining administrative experience in the government, you should consider applying for an American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellowship. These Fellowships are designed to provide a unique public policy learning experience, to demonstrate the value of science-government interaction, and to make practical contributions to the more effective use of scientific and technical knowledge in government. Congressional Fellows spend one year serving on the staffs of Members of Congress or congressional committees during which they serve as special assistants in legislative and policy areas that would benefit from science and engineering input. More information can be obtained from the AAAS website[7].

The Office of Naval Research sponsors a Faculty Sabbatical Leave Program as well as a Summer Faculty Research Program. These programs provide an opportunity for faculty members to participate in research of mutual interest at U.S. Navy laboratories. More information is available on the American Society for Engineering Education (ASEE) website[8].

The U.S. Air Force sponsors a Summer Faculty Fellowship Program that is administered by ASEE. This program provides stipend support for eight- to twelve-week research residencies at participating Air Force research facilities for full-time science and engineering faculty at U.S. colleges and universities. More information can be obtained from the ASEE website[9].

7b. Timeline for Seeking Funding

Obtaining permission to take a SL is not automatic at most colleges and universities. Usually one has to apply for a SL during the fall semester prior to the year of your SL.

Many faculty grossly underestimate the time required to prepare for a SAL. Applications for Fulbright and Guggenheim Fellowships need to be submitted approximately one year prior to your proposed departure. However, prior to submitting your application you need to establish contact with your proposed host institution. Your application will be greatly strengthened if you have letters of invitation indicating proposed collaborations as well as any amenities that will be provided to you by the host institution such as an office, laboratory space, clerical support, computer and library access, assistance with finding accommodations, etc. Since supporting letters are required, you need to give your references adequate time to write substantive letters. Hence, it is not unreasonable to begin planning for your SAL two years in advance of your proposed departure.

Proposals to NSF's GOALI program and OISE supplement awards for international collaboration have turn-around times of just a few months. However, it is critical when applying for one of these grants to consult the appropriate Program Officer prior to submitting any proposal.

7c. Covering Your Bases Back Home!

An argument some faculty advance for not taking a SAL is that their research program will suffer during their absence. They also worry that graduate students working with them will flounder without regular mentoring. There are several means for addressing these concerns. One can bring in someone from industry or another university to fill in for them in their absence. For example, when the author went on his first SL in 1974-75, he brought in one of his former Ph.D. students who had been working in industry but who expressed some interest in an academic position. This young man not only took over the author's research program, but also picked up some of his teaching load to help the Department. Filling in for the author during his SL was also quite beneficial to this young man since he chose to leave industry and pursue an academic career. He is now a very successful professor at a major university and very active in ASEE! However, finding a replacement is unnecessary if one is involved in collaborative research projects. For the past 25 years, the author has always worked collaboratively with other faculty

on his research projects. Hence, when he elected to take a SAL, there was always someone to fill in for him. The Information Age has also made keeping up with one's research program much easier. The author kept in regular contact with his graduate students and faculty colleagues via utilities such as Skype® and Yahoo Messenger®. Remember it is also possible to take some of your graduate students with you on a SAL. NSF is now encouraging international technical/cultural opportunities for students. Supplements can be obtained to existing NSF grants to provide an international experience for your students.

8. The SAL as an Investment in Your Future!

The experience you gain via one or more SALs will greatly increase the value you bring to your profession and college or university. Every SAL you take will change you professionally in a very positive way. These SALs stimulate you to explore new teaching and learning methods, to embark on different research areas, and to acquire new skills and expertise. An impressive list of SAL appointments strengthens one's resume and can be influential in attracting offers for future employment and special assignments. Without a doubt, SALs help to make you very marketable even as you advance into the senior years of your professional life. The author is firmly convinced that the extensive experience he gained via the SALs taken when he was a full-time faculty member has helped to keep him professionally active as evidenced by the three VFAs he has had since retirement and his current appointment at NTU!

9. A Neglected Issue regarding SALs

The author is remiss in not discussing the important issue of dual income families. However, this article is based on the author's experience. He did not have to face the dual income family issue; although his wife is a professional, she chose not to work for remuneration after their marriage. Undoubtedly, planning a SAL for a dual income family will require more than the two-year lead time suggested in Section 7b. Despite the additional difficulties involved for dual income families, the author's recommendation is "Try to make the SAL happen!"

10. Conclusion

In concluding this paper, the author will defer to Mark Twain[10] who in commenting with his sagacious wit on the subject of travel said…

> *Travel is fatal to prejudice, bigotry, and narrow-mindedness,*
> *and many of our people need it sorely on these accounts.*
> *Broad, wholesome, charitable views of men and things cannot be acquired*
> *by vegetating in one little corner of the earth all one's lifetime.*
>
> – Mark Twain

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