1. A CAREER AT A SMALL COLLEGE OR UNIVERSITY

A career in education at a small college or university has many of the same components and issues that working at a large research university has, but there are some differences that can make this type of position either very appealing or the wrong choice for you.

Many of these institutions are based on the liberal arts, and some may have a religious background. Those of us who work at these types of institutions still have all the pressures of time and commitment, along with the same teaching, promotion, and tenure issues that are addressed in other chapters in this series, but perhaps from a different perspective. Often we are talking about a difference in scale, but at other times the emphasis is quite different.

1.1 Promotion and Tenure

The main mission of most small institutions is teaching—not the ‘publish or perish’ emphasis you may find at larger institution. At my institution, when one applies for promotion or tenure, we are evaluated on the following categories for approximately the corresponding percentages:

- **Teaching 50%**
- **Professional Development 30%**
- **Service 20%**

The reality is that teaching is a 100%-time job, and the rest of the 50% fits in on top of the 100%. We are evaluated on many of the important aspects of teaching that are commonly required at any institution: being organized, creating an atmosphere in the classroom that is conducive to learning, and incorporating new materials into the courses. The expectation is for exceptional teaching skills and dedication since this is the main emphasis of our positions.

Professional development is an umbrella phrase that includes issues like publishing, advanced study, doing research, going to conferences, organizing workshops and conferences, and all of the other activities that we do to keep ourselves current and involved in computing.

In addition to teaching and professional development, service is often a very important part of a small college, especially perhaps those liberal arts institutions that have evolved from a religious background. Service can be divided into three categories: service to the department, service to the college as a whole, and service to the community.

Service to the department can include things like chairing the department, being on subcommittees within the department, recruiting new students, acting as an academic advisor, serving as a student club advisor, or being responsible for the student cooperative education experiences. The list could go on to include many other tasks that need to be taken care of within the department. Often some of these tasks are taken care of by support staff at a larger institution, but these support personnel may not be available at the smaller school.

Service for the college would include committee membership, representing the department during college functions (e.g. Admissions Open House, Development Showcase), or participating in other college events and activities.

Community service means providing leadership and sharing your expertise, perhaps in a civic capacity, as an educational resource for grade or high schools, or with one’s church. It might include things like acting as a liaison to one of the local high schools, talking to the Scout explorer groups, or serving as an expert source for the local newspaper or television station.

1.2 Teaching

While all of these promotion and tenure issues are important, the most important issue is teaching. We can all identify with the importance of having an advisor we could work with while in graduate school. It may be just as important to have a mentor when you start teaching. Find out who is a good teacher and see if you can convince that person to help you. It may be a very informal process. You may just take her to lunch or dinner and ask about the accepted practices at your institution, find out if you should really be going to all those meetings and functions you hear about, or ask about important practices within the classroom.

Teaching at a small institution is different from teaching at a research institution. You may have to teach more classes. Typically a semester load is teaching four classes, 12 contact hours. If you are lucky, it may be only two or three different class preparations, but it could mean four different sets of preparations. That is a lot of work: four sets of assignments, four sets of programs to grade, four sets of exams. You may not have teaching assistants who can staff office hours, answer student questions, or help with grading. However, after you get to know the undergraduate students within the department, you may be able to utilize some of them to help you with the routine kinds of tasks you have for your coursework. This may include grading programs, conducting help sessions, or assisting in closed labs. But it is important that you train them well and let them know exactly what is expected of them.

In addition to the issue of the number of class preparations, you may not have as much choice in what you teach. Perhaps your specialty is in AI, but an operating systems course, a C$1 course, or a computer architecture course needs to be taught and you may have to teach it. So an implied requirement at a smaller institution is to main-
tain a wide breadth of interest—to keep up to date with all areas of computer science. That can be a challenge while still trying to stay informed about the latest developments in your area of specialization.

In a larger institution there may be several classes dealing with your specialty and you may be able to teach some of them. But in a smaller institution, there may not be room in the curriculum for several classes, or even one class in your specialization. For instance, let’s suppose your specialty is in neural nets—at a large institution you may be able to have a class or two dedicated to neural nets. But at a small institution, the curriculum may only have room for a general AI class. You may be able to spend a little more time than normal on neural nets, but not to the extent of what you would like. Often in a smaller institution, the curricula contain the breadth but not necessarily the depth you might find at a larger institution—especially in subfields within the discipline. You may be able to get around this by offering a special topics class or a symposium dealing with a particular subfield, but that may not happen consistently.

Another issue to be considered is the frequency with which classes are offered. Because enrollments are smaller, most classes aren’t offered every semester, so you may not teach a particular course but once every three semesters. By that time often there is a new set of hardware or software installed, new developments in the field have emerged, and the old textbook is outdated. So teaching that course again takes a lot of work. Your foothold keeps slipping. You should try to schedule these types of classes so they are staggered, so you don’t have more than one of them every semester.

However, there are also many positive aspects to teaching at a smaller institution. We have a real opportunity to be interested in many different areas of computer science—to not stay so tightly focused on just one subfield. Because of smaller class sizes we can get to know our students personally. We can keep track of when students may be having problems in a class and can suggest something that may help them before it is too late to salvage that particular class or even their career in computing. We will probably teach them in several courses within their college career, so we can understand their interests and goals, their individual strengths and weaknesses. We can influence them in their career choices—whether that may be to continue their studies in graduate school or to help them take advantage of their particular strengths in an applied area.

13 Research

With so much of our effort spent in teaching classes, and additional work that needs to be committed to professional development and service, finding the time to do research is usually the biggest issue. Summer is probably the biggest block of time that most of us find to devote to some sort of research. That research may be in your thesis area or other area of interest, but it may quite possibly be focused on your teaching. Its primary emphasis many be on how to improve a class you teach: learning about new developments in the area, developing new projects or labs, attending workshops or conferences dealing with the topic, or other activities that will improve your teaching and classes.

Release time is another related issue. Many institutions may not regularly provide for release time during the academic year, so the only way you may be able to get it is through grants, which of course implies needing more time to spend on developing proposals and all the related activities that go along with them.

One of the hardest aspects about doing research is that you will probably be the only person at your institution with your interests. If you want to bounce ideas off of someone or have a particular problem or question, you won’t have anyone to turn to at your home institution, so a feeling of isolation is sometimes a fact of life. That is why it is so important to cultivate interdisciplinary contacts within your own institution and to develop contacts and collaboration among colleagues from other institutions who may be in similar situations. These contacts may be very helpful in writing grants, developing new coursework, or just helping to provide new ideas for exam questions or class assignments.

To expand your circle of professional contacts, you should attend conferences and organizations from your research disciplines. There are also those organizations that are dedicated to teaching, such as ACM’s SIG on Computer Science Education, and there are organizations specifically for those of us from smaller institutions (Midwest Instruction and Computing Symposium, the regional sessions of Consortium for Computing in Small Colleges). People who attend these symposia and conferences often propose innovative solutions to the same kinds of situations and problems that we may experience in our own classrooms.

Another problem you may encounter when doing your own research is that there may be fewer institutional resources available. There may be fewer support staff in the grants office, hardware availability may be inadequate, travel funds may be limited, the computer staff may be less experienced in a variety of software and hardware platforms, and even the availability of clerical staff may be an issue. You may find that you have to pursue these kinds of resources through grants or other funding sources. Even matching funds may be an issue. A fifty thousand dollar match for a grant may be a problem at a smaller institution but may not be as much of an issue at a larger institution where more funds are available.

You may also have to be creative in getting help with your research. At a large institution you may have research assistants (RAs) available, but since most smaller institutions don’t have graduate students, you won’t have RAs. However, you could get your undergraduate students involved. There is an emphasis for undergraduate research now by organizations such as the National Science Foundation or Computer Research Association, so you may be able to get funding from these sources. This is a win-win situation, giving you help with your research and providing your students with a valuable experience and an example of what graduate school may involve.

14 Service

There may be many ways of providing service within your department since often support staff are not as available as in larger institutions and you may be working more closely with your students. Students may seek you out for special projects or advice in solving academic, career and personal problems.

One of the aspects of serving on college-wide committees that can be very satisfying is working with colleagues from many different disciplines. The opportunity to have a larger view of your institution can be very rewarding and may allow you to have a wider influence than solely within your own department—especially as a junior faculty member. You may have many opportunities to serve on committees, since often computer-savvy people are sought out to provide added expertise to the membership.
2. EPILOGUE

If you choose a career teaching at a smaller institution, you will have to work just as hard as your counterparts at larger institutions but often without the recognition or support they enjoy. However, having the opportunity to focus on teaching, working closely with your students, having a wide experience with many aspects of computing, and interacting with colleagues from many disciplines can be very rewarding.

If you are going to choose a career at a smaller institution you have to love teaching and enjoy a smaller environment. You may think of yourself as a teacher who happens to be a computer scientist rather than a computer scientist who is teaching.