

ESTABLISHING A HUMAN FACTORS CAREER IN THE NEW MILLENNIUM: ANSWERS TO FREQUENTLY ASKED QUESTIONS

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This is a summary of a panel held at the Human Factors and Ergonomics Society 44th Annual Meeting. The objective was to provide advice and answer questions for students preparing to begin their career in the field of human factors and ergonomics. To produce a paper most beneficial to its readers, some information has been added throughout its development. A table providing an overview of the panel's career advice is at the end of this summary. The panel was chaired by Ronald G. Shapiro, IBM Corporation; panelists included Diane de Mailly, HFES Membership Services Manager; Jennifer C. Watts-Perotti, Eastman Kodak Company; Steve P. Fadden, Intel Corporation; Jean E. Fox, Bureau of Labor Statistics; Arnold M. Lund, Sapient Corporation; and Anthony D. Andre, Interface Associates and San Jose State University,

Please give a brief explanation about your career as a human factors/ergonomics practitioner (if applicable) and provide what you feel is the most important advice you can offer individuals beginning careers in human factors.

Diane de Mailly— At the placement center (<http://hfes.org/Placement/Menu.html>) we're seeing a surge of jobs in the human factors/ergonomics profession. The job market is expanding and employers are saying it is harder and harder to find good people.

The best advice I can offer, besides to do well in school, is to maintain your membership in the society for networking. Along those same lines, this conference is a great opportunity to begin networking, whether it is through sessions, hanging out in the placement center, or just talking to someone you see who is employed in a company you are interested in. It is also important to make sure you update your resume frequently and check job postings on a regular basis (last week alone the placement center received 20 new postings).

The next few years are going to be a good time to find a job you are interested in with really good companies. In addition, HFES will be conducting salary surveys this winter, which should be available by next spring (2001). Other methods of finding out salary information include looking through current job postings and searching technical group websites (Arnie Lund). Job seekers should also be aware that human factors positions are found in a variety of titles; information architect, interaction designer, contextual researcher, ethnographer, usability specialist, and user experience engineer, and you may need to search many synonymous job titles to see the whole scope of positions available (Tony Andre).

Jennifer C. Watts-Perotti —I am currently working in the Anthropology and Ethnography group in the Human Factors lab at Kodak. My group conducts in-context studies to learn how Kodak can develop products to support customers better.

I recommend that people who are beginning their career in Human Factors should take full advantage of the HFES placement center during the conference, and interview with

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lots of companies. In these interviews, make sure you spend part of the time as the interviewer instead of the interviewee. Bring a list of questions that you want to ask the company. By the end of the interview, make sure you have some feel for what it would be like to work there, and whether you might be happy there. If you do this with enough companies early in your job search, you will get a better feel for where you want your career to start, and you will get some concrete ideas about what you want from a potential employer.

When you do begin working, don't just do what is asked of you, but take a proactive role, and take steps to become involved in the projects and activities that interest you most.

Steve P. Fadden – I am currently the manager of a human factors group at Intel Corporation. I was hired a year ago and halfway through the year, my group experienced a significant amount of growth and a need for additional management. As our group grew, a group of project managers was developed (including myself).

My experiences have taught me that it is important to establish a network early on, regardless of whether you are student or an employee. Also, put your resume in the HFES Placement database, and speak with companies even if you don't believe you're initially interested in them. This provides you with interviewing experience, helps broaden your network, and increases your understanding of what different employers expect of human factors practitioners.

Companies are starting to understand that it is the user experience that is going to capture the customer and enable them to be successful. Speaking with different employers can help you understand where

they are in terms of their commitment to human factors. This will then enable you to determine if there's a good fit between your beliefs and their expectations.

Jean E. Fox – I work for the Bureau of Labor Statistics, where we collect economic data, then generate and publish a variety of economic indicators. In my job, I support several development teams that are building data collection instruments for the Customer Price Index. In many cases, data collectors still use paper, but we are working to automate the process. This will allow data collectors to collect data using hand-held computers, and then upload the information directly into Washington Office databases, where the statistics will be calculated. One of the major problems we face is that some of the data collectors have no computer experience at all, and we need to figure out how to design their tools and to train them.

I have also worked at a consulting firm for two years, so I can share a little about the differences between working for the government and industry. A well-known difference is that industry typically pays more than the government. However there are several benefits to working for the government. I rarely have to work more than forty hours a week, and the vacation time is very good. Another difference is that at the consulting firm, I worked in a variety of domains, whereas in the government, I have focused in only one domain, survey methodology.

The most important advice that I can provide is "Do not sell yourself short" and "No experience is too small." For a while, when I was asked about areas where I thought I had no relevant experience, I would simply respond that I didn't have the skills they were looking for. Then, at one interview, I gave an example of some work I

had done, even though I didn't think it was what the interviewer wanted to hear about. As it turned out, it was exactly the skills he was looking for. Even if you don't think you have any relevant experience, try to relate some experience to the skills needed for the job you are seeking. Especially with today's labor shortage, it will be to your advantage if you can show that you have relevant skills.

Arnold M. Lund – I started working in human factors in 1980 in the Bell System (for 9 years), where I ended up managing a group. Then I went to Ameritech, which was later bought out by SBC 0Communications, Inc. Next I went to US West (for 3 years), which has since been taken over by Qwest. I am currently employed at Sapient.

My current title, Director of Information Architecture, did not even exist three years ago. Therefore, my advice is be prepared for change. You are moving into an environment where you need to manage your career by thinking about the big picture. Find out the things that interest you and then grow and contribute in those areas. Seek out a company where you are able to provide something to the company and where they can provide something to you.

Anthony D. Andre – I am currently a professor at San Jose State University, own a consulting firm, and still do some work for NASA Ames Research Center.

Given that you're in school now, what should you be doing is putting yourself in the best position possible. I think the first thing that you could do is know the web. If you're going to work for a company that doesn't have a web application now, they're going to have one in the future. You need to know the language, the technology. If you

can code some sample screens in HTML or JAVA, that's great but you need to know what the web is. You need to know the difference between a web site verses a thin client or a web application.

The other thing you can do now is prepare to have something when you go into an interview that demonstrates who you are and what you can do verses a pure verbal, you know, "I can do this, or I've done that." In other words, something tangible. Show me the "before" and "after" - something visual and tangible that you can demonstrate verses just words.

And I think one of the most useful things you can do is practice giving an interview and imagine that a fellow student, the brightest person, the most accomplished student you know of has just interviewed before you and think about how you can stand out to get the job over that person.

Finally, given this "bull market" don't just go for the money or the title. I can't tell you how many students of mine who were making big bucks and who, not graduated – in their first semester of a human factors program, are managers of a human factors group for some start-up who come back to me six months later crying about the fact that nobody listens to them, their group has no power within their company, they're always brought in after the fact, etc. In other words, they have no job satisfaction in the end because they took the money and they didn't really critique the role that the human factors group played in that company. Just because a company's hiring human factors and says we care about usability doesn't mean you're going to have a satisfactory job.

How soon in advance is it appropriate to begin job-hunting? For example, I will be graduating in 9-10 months so should I even be looking now (at the 2000 HFES Conference) – Karen Young, North Carolina State University

Jennifer C. Watts-Perotti - I didn't know when I was going to graduate when I began interviewing with companies. In retrospect, I actually began interviewing a couple of years before I was ready to start working. I'm really glad I started that early because it helped me get a better idea of what I wanted to do with my career, and helped me understand what I wanted to look for in an employer. My interviewing experiences also affected how I spent my time during the rest of school. It helped me determine what I wanted to focus on in school, and affected my choices of internships. So I think it's never too early to start interviewing.

Ronald G. Shapiro – It is never too soon to start interviewing companies, meeting people, and forming a network. Stay in touch with the people you are speaking with and maybe even have them review some of your current projects (e.g., a website you are building).

Jean E. Fox – In applying for a job with the federal government, I had my first interview in April, but I didn't get an offer until the following January. Sometimes it can take a long time for that process to happen, but I have to admit, it took a lot longer than I thought it would.

Arnold M. Lund – The more interviews you do, the more you learn to interview effectively, so that by the time you get to an interview for a job you really want, you have already built up some invaluable skills.

What advice do you have for employers on how to grow or bring on new employees so that they will be successful? – Nancy J. Dolon, Department of U.S. Navy

Arnold M. Lund – Gradually give the new employee more and more experience and responsibility, get them in on different teams and try to sell the big idea. Prospective employees should ask employers how they will facilitate your growth in the company, and a career in human factors.

Anthony D. Andre – What happens is most employers hire someone fresh out of school. They bog them down with work full-time – grunt work, because that's what they're capable of doing at that point – then they wonder three years later why they're not this superstar ready for the managerial role. And I think the solution is the employer has to commit some portion of time to educating that person. In other words, if you're going to a meeting with the Board of Directors where you're pitching a proposal, let that intern come with you. They don't have to do the work – just be exposed to that high-level activity. It's a commitment that both people have to make, but it's really got to come from the employer.

Jennifer C. Watts-Perotti – My advice is to 'push people into deep water' and then swim with them. Give them responsibility and ownership for a small project and be there to help out. For example, assign a mentor who has the time and interest to answer questions as they face the new challenges of the project.

Ronald G. Shapiro – I agree with Jen. The employer needs to assign ownership and the employee needs to assume responsibility almost immediately. One excellent way to assure this happens is to assign each new

hire leadership for at least one project. Make certain that the employer and the entire team is there to help and support the new hire, work on the project, and answer questions as needed, but be sure that the new hire maintains overall project responsibility.

Steve P. Fadden – There are many people working in the field or just beginning their careers who do not have the level of experience desired from employers. The best recommendation I can give is to build and develop your employees' experience through a mentoring program. If such a program is not available, consider creating internal side projects that can have tangible value for the group. As new employees gain experience with internal projects (and well-defined tasks contributing to external projects), the depth and breadth of the work can be expanded.

How do you know if you are ready for a role in management, especially if you enjoy doing hands-on work but your employer is pushing you to manage? - *Todd Chapin, Speechworks Intl.*

Steve P. Fadden – I spend about 70% of my time on management issues, such as determining how to help support the team, making decisions that affect long-term strategy, and insuring that the right projects are supported at optimal levels. I spend the remainder of my time actually working on projects, and that can get frustrating. If you do not feel you are ready for a management position then don't take it. However, managers often get a better view of the bigger picture, and are often more aware of the company's strategy and direction. Individual contributors are often in roles that involve plenty of tactical decisions, determining the best way to successfully perform tasks and achieve project goals.

Arnold M. Lund – I left one company that I worked for because I was being asked to just do management work. I wanted to take a job with direct interaction. You should also be aware that many companies have a technical ladder and a management ladder for their employees.

Anthony D. Andre – You might need to educate your employer. They probably think they're doing you and themselves a favor because they recognize the fact that you do good work, but you just need to let them know that the reason for your success is that you design great user interfaces. It'll be to both the company's and your disadvantage if you move away from doing what you do best and attempt to manage people, which you may not do as well or not be interested in doing. The other thing that might help is to already have someone else to nominate in your place.

Is there a need for a second degree or knowledge in a technical area to support your career in human factors? – *Source Unidentifiable*

Anthony D. Andre – Definitely, although it's hard because you have to predict the field. For example, I'll have a client come in and they'll say, "We want you to re-design our user interface. I just wanted you to know we're just doing straight HTML, no JAVA." You would need to know exactly what that means in terms of what the interface could look like and how it could behave. The tough thing is which field do you pick to get this second degree; but you don't have to get a degree. You just have to know the implications of that field in the context of applying human factors

Arnold M. Lund – Get a second degree or specific knowledge in an area that is particularly interesting to you. If you are

interested in telecommunications, then find out everything you can about wireless devices. This will also give you a leg up on the competition when you are job hunting.

Jean E. Fox – Try to become an expert in something. You may find that your company will provide you with the training to get this knowledge.

There are a lot of human factors positions on the web that require HTML but they are also looking for more intense programming knowledge, like C++, C, JAVA, JavaScript. At what point should you think this is not a human factors position, but a posting for a computer science major who knows about human factors. Or do you need to go out and learn these difficult programs? - Allison Perez, California State University, Northridge

Anthony D. Andre – First of all, they may actually be looking for a developer to be a human factors practitioner, or secondly, they may want a human factors practitioner that will design the interface for the user and then code it as well. It is very unlikely that they will be able to find a person that can do both very well. Knowing some code is a reasonable expectation but you might need

to educate your client that you design interfaces and then their developer should do the actual coding. Therefore, be sure to understand the expectations and the job functions/role that you will serve within a given company.

Ronald G. Shapiro – You should go get that education, learn C++ or Java. Many companies require you know some HTML and prototyping. Your job title may be software engineer. However, these companies are most likely not looking for someone to code, but they want you to be able to understand the process and contribute to the engineering design of the product. Check it out by asking the right questions at your interview.

Final thoughts from the panel chair, Dr. Ron Shapiro.

It is important that you build a network early and often in your career in human factors. Begin this interaction now by going to technical group business meetings, doing an internship, and seeking out what things in the field interest you. Get as much exposure as you can and focus your career goals on those areas that fascinate you in human factors.

Table 1: Overview of Career Panel Recommendations

Name	Advice
<i>Diane de Mailly</i>	Do well in school Maintain your membership in HFES Update your resume frequently
<i>Jennifer C. Watts-Perotti</i>	Know what questions you want to ask companies in job interviews Use internships and job interviews to discover how you want to focus your school experience Become involved in the projects that you find most interesting
<i>Steve P. Fadden</i>	Establish a network early Put your resume in the HFES database Get as much interviewing experience as you can Determine if there's a good fit between yours' and a company's expectations
<i>Jean E. Fox</i>	Do not sell yourself short No experience is too small
<i>Arnold M. Lund</i>	Be prepared for change Manage your career by thinking about the big picture Find out the things that interest you and contribute in those areas
<i>Anthony D. Andre</i>	Know the web; the language and some technical aspects Have something tangible to show at an interview At an interview think of how you can stand out compared to the brightest student Finish your education Do not just go for the money and title Seek a company where human factors is brought in at the concept level and has an impact on the project
<i>Ronald G. Shapiro</i>	Build a network early Do at least one but no more than three internships Establish your career goals and get knowledge needed to achieve these goals