

PREPARING FOR YOUR PROFESSIONAL CAREER: WHAT EVERY STUDENT SHOULD KNOW

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Welcome to the sixth annual Human Factors and Ergonomics Society career panel. This year, each panelist was asked to prepare guidelines which they felt were most important for students to consider and follow as they prepare for a career in Human Factors and Ergonomics. Topics selected include: Working in Academics vs. Industry, Maximizing and Communicating Your Value Proposition, Your Career Path: Fate vs. Design, Preparing for a Career While In School and Five Simple Guidelines for Planning Your Career.

POSITION PAPERS

Working in Academics vs. Industry, Ronald G. Shapiro.

There are plenty of jobs for the well prepared Human Factors (HF) Master's or Ph.D. graduate in industry. These jobs provide interesting work and good salary and benefits, however these positions are not a good match for the interests and skills of every human factors graduate. While at one time the saying "if I can't get a job in academics I can always succeed with a good job in industry" may have been true, it is not true today. The reason for this is that there are several fundamental differences between continuing in academics and moving to industry. The biggest of these differences is in job focus:

- Academics is focused on creating and sharing new knowledge with the world via publications, presentations and teaching, which involves explaining past knowledge.
- Industry is focused on using knowledge and experience to design, develop, and evaluate products which will be profitable in the marketplace.

This difference in primary focus results in a variety of other differences in the way work is done in academics vs. industry.

Communications. In academics one communicates primarily with other specialists in the same area of expertise, whereas in industry one communicates primarily with people in vastly

different areas of expertise, such as programmers, developers, marketing, sales, and service people. It is important to educate industry colleagues about the role of HF in product development and to learn about other professions. If HF is to make a meaningful contribution it is necessary to have the support of other team members.

End product. In academics the end products are easy to identify-- publication in a prestigious journal, obtaining funding, establishing a reputation, and earning tenure. Oftentimes these are "individual activities," whereas in industry one is "working through others." The measure of success is not whether or not a report is completed or how good the report is. It is the product quality, market place success, and one's contribution to the end product as measured by the amount of influence one had over product designers and developers to get them to improve the product.

Satisfaction. In academics there is satisfaction in being able to pursue intellectually stimulating ideas and teach good students. In industry satisfaction comes about from influencing a project, turning ideas into products, and seeing them in the market.

Working in teams. In academics working alone or being the senior author on an article is the desired goal, whereas in industry it is fairly unusual for a human factors person to work successfully as an island, and it is also fairly unusual for the human factors person to be the head of the product team. In some industrial assignments, one is more likely

to be assigned projects and teams, whereas in academics one is more likely to be able to select their area of specialization and who they want to work with.

Deadlines. In academics deadlines are often not enforced. Extensions are often given for better quality, whereas in industry missing a deadline for a HF project may mean the entire HF effort was wasted. If a deadline is missed, not only is the current HF effort wasted, but future attempts to influence product development will be more difficult. In practice, one is often given both tight deadlines and limited resources, so it's impossible to do the "perfect design." Compromise is key!

Project completion. In academics project completion, running every last statistical analysis is very important, whereas in industry the 80/20 rule often applies, that is, you can do 80% of the work with 20% of the cost... So stop at 80%. Because of these real differences, people who would be successful and happy in industry might not be successful and happy in academics and vice versa. Thus, it is absolutely critical to begin exploring the idea of working in industry early on in one's educational career.

- Make contacts with industry. Get advice from people at all stages of their career.
- Learn a lot about working in the industry. Develop the skills the industry is looking for in addition to your HF skills.
- Do a co-op or internship for six to twelve months.
- Develop some basic financial and project planning skills.
- Be sure that you are a good team worker.
- Be sure that you can communicate well with people from diverse backgrounds.

Maximizing and Communicating Your Value Proposition, Anthony D. Andre.

Okay, so you have a degree in Human Factors/Ergonomics (HF/E), your graduate GPA is sky high, you're published, and you might even have an internship under your belt. Does that make prospective employers take notice of you? Don't bet on it.

Of course, your past accomplishments are important, and indeed nearly all employers use them

as their initial "filter." But to get the job you really want (or need!) you have to convert those passive lines of text on your resume into an active form of currency known as the "value proposition."

What is the value proposition? Simply stated, the value proposition is a statement that summarizes your worth as a potential HF/E professional. In contrast to a resume, which is a statement of what you have done, the value proposition is a statement of what you can do. In effect, the latter is a derivative of the former.

To understand the importance of developing your value proposition, put yourself in the position of an employer looking to hire a recent HF/E graduate. You peruse perhaps two dozen resumes, most with similar accomplishments. So, how do you get a feel for which applicant can do the most for your business? You usually can't.

Now imagine that one of these applicants explains what they can do for you and how they will do it — the types of tasks they can perform, the projects they can lead, the skills they can share with others, the unique perspective they can contribute, the "products" they can deliver — all in the language of your business. Talk about a pop-out effect!

Maximizing your value proposition. Before discussing how to communicate your value proposition, let's first review some of the key ways to improve your "worth."

Life truly would be beautiful if we could get by on our HF/E skills alone. But business is another world altogether, of which HF/E is only a small part. Before entering the proverbial "real world" take at least one basic course in marketing, business economics and industrial design. These courses will aid you in applying your skills within the context of the product/system development process, and will introduce you to the terms and issues that are most common to the other employees you will work most closely with.

Now, imagine you had a great idea for improving the user interface of a software program, a web site, or a medical monitoring device. How would you communicate your idea to your colleagues, your boss, the client, or the end users? It's not enough just to have great ideas; you have to be able to communicate your ideas in various tangible forms.

To this end, you should become proficient in at least one drawing/graphics program (e.g., Photoshop™ or Corel Draw™) and one prototyping tool (e.g., Director™, HTML+JAVA™). And it goes without saying that you must learn to verbally present your concepts, designs and philosophy in a comfortable and effective manner. Simply stated, start speaking and don't stop!

Communicating your value proposition. So, now that you have the goods, how do you present your value proposition? The most effective way to present your value to a prospective employer is to articulate how their business will change if they hire you. After all, as an employer, what I'm interested in knowing is if, and how, my business will succeed or grow with you on the team. In essence, then, you need to communicate three simple things: 1) your ability to perform HF/E activities that are assigned to you, 2) your ability to integrate your HF/E skills within the context of a larger business process, and 3) your ability to make the company more money. (On the last point, remember that employees only exist to make employers more money).

A good way to prepare such a grand expression of your value is to write a short essay entitled "A future day in the life of company X." Create a mock scenario where your HF/E skills, your visual and verbal communication abilities, and your understanding of product development, marketing and business practices produces a positive impact on the company in question.

If done right, this is one proposition that won't be rejected!

Your Career Path: Fate vs. Design, Aaron E. Sklar

Exploring your options is the key to finding a career that suits you. The field of human factors is quite broad; thus a degree in human factors can theoretically result in a variety of positions in practically any industry. Students are faced with daunting choices of what type of job to look for and in what domain.

Rather than relying on luck, you may increase the likelihood of landing your dream job by taking an active role in designing your own career path. There are three hurdles that students face on the career path: (1) figuring out what job you want, (2)

getting that job, and (3) being successful at that job. All three of these are highly interrelated. Following these words of wisdom will facilitate your overcoming the three hurdles.

Get a mentor. A mentor can be a world acclaimed professor, someone with a job you want to have someday, or even another student — anyone whose opinion you trust because they have experience in what you are going through. The great thing about a mentor is having someone on your side. As awkward as it sounds for everyone involved, actually labeling someone as a mentor may strengthen the relationship. Such a declaration of trust and respect will likely be flattering to the mentor and make him or her more emotionally invested in your success.

Do an internship. The majority of my fellow students ended up getting a job directly related to an internship they had. Either they got a job at the company that they interned at, or they got a job from someone they met during the internship.

Many companies consider internships to be an extended interview. Likewise, an intern should treat that period as an extended evaluation of the job. An internship gives you guidance on whether you are interested in that field and that company. The most important benefit of an internship is the experience you gain in the work practices and routines of a job as well as practical work experience.

Participate in HFES. Participate in several societies related to your area of interest. In addition to the educational benefits, it's a great way to find potential mentors, internships and friends. These organizations offer an opportunity to meet people with similar interests. The human factors field is still small enough that who you know can really make a difference. The people you meet will be your colleagues for the rest of your career.

Specialize. Attaining mastery over a specific topic not only makes you an expert in that subject, but it also shows potential employers that you are capable of hard work and have the ability to master other topics as well.

Don't Specialize. Learn at least the basics of *other areas of HF*. In school, we tend to focus only on the subset of the field that pertains to our area of research. Your future job may require you to be the representative expert in all of them.

Learn about *other fields/disciplines* that you may work closely with (e.g., industrial design, engineering, business). HF doesn't exist in a vacuum. Develop skills so you can communicate with others using their terms.

Realize it's part luck. In the world of business, timing makes a big difference. A perfect candidate may not get hired if it's not a good time for the company. Good Luck!

Preparing for a Career While in School, Sabina Alteras-Webb.

The notion that graduate school alone is sufficient preparation for "the real world" is one I do not agree with. There are a great deal of "book smarts" and learned skills to be valued from a graduate school education, and it is undeniable that those little letters after your name do carry some weight in the non-academic world. However, graduate school alone cannot prepare you for the diverse work environments you will face after graduation. In contrast to this position, quite often graduate programs frown upon students who deviate from the "I am a full-time student" mold.

Working while going to graduate school. I know of very few graduate students who can afford to be strictly "full-time students". Even an assistantship or stipend isn't enough to live on. The situation becomes even more complex for students with families to support. Traditionally these students are looked at as being at a disadvantage -- they have responsibilities besides their studies, and therefore, they will take longer to finish their degree. It is true that employment may lengthen their time in graduate school. However, while it may be difficult to juggle school and work, there are important benefits to transitioning oneself into the Human Factors workforce to some extent while still in school, and work experience may contribute substantially to ones preparation for a first Human Factors position. Furthermore, industrial employers may favorably consider this work experience in their hiring decisions--especially if it helped to develop critical skills, and this is presented appropriately in a resume and interviews.

Advantages of a Human Factors Degree. As Human Factors professionals (or professionals -to-be), I think we are at an advantage over other

academic graduate fields of study. We are not limited to academic careers, and for a graduate student who has several life priorities, this is a very important thing to realize. There are many companies who need employees who are skilled in conducting research, designing usability studies, data analysis, and writing. These are skills that are essential and can be learned "on the job" as well as from graduate courses. Similarly, graduate students in psychology, and particularly those in human factors are finding it more and more necessary to learn to use technology in order to design their own studies (i.e. simulations, experimental sessions, etc.), gather and analyze data, and present data. These skills are not only a means to finishing one's degree, but they make one much more marketable throughout ones career, and not just in the Human Factors field.

Learn about programming. Involve yourself, and learn as much as you can about programming in some software development languages in addition to any statistical programming you do for your courses. Gather experience using well-known fourth generation programming languages, prototyping and simulation software. Acquisition of these skills can be incorporated into your graduate school course work and research. Audit courses from the computer science department on your campus. Any opportunity you have to learn computer technology will put you at an advantage, especially in industries where you may be required to not only evaluate and design work systems, but also take an active part in building them as well.

Internships. Find out if your department offers an internship or co-op program. Making connections in industry before you are finished with school will assist in making your name known in the field, and will prepare you for the job market much sooner after you finish your degree. Most importantly, it will prepare you for the huge culture difference between academia and industry. Decide if you think you could manage working while completing your degree. It is not easy, but there are some benefits, besides the income. Many organizations will support your efforts to finish your degree by offering flexible hours, use of their resources to do your research, and some companies may even be able to provide you with data for your thesis.

Five Simple Guidelines For Planning Your Career, Jennifer McGovern Narkevicius.

Planning your entire career is a daunting task, especially when you consider that you don't really know much about your chosen profession, or perhaps much about yourself yet. Knowing precisely what courses to take and experiences to line up seems both one of the most important things you can do to prepare yourself whilst simultaneously being one of the riskiest things you can do.

I have five simple guidelines that have stood me in good stead and withstood the test of time (so far!): *broad-based training, resourcefulness, diverse experience, interoperability, and networking.*

Broad-based training is the foundation. Human Factors, as a discipline, is broad-based and interdisciplinary. It not only our knowledge of the human that makes us essential to the design team, but also our understanding of the design process itself. We are on the team because of our depth of knowledge and understanding about human performance in a system. However, our real value added is enhanced when we bring a multidisciplinary approach to our own discipline.

Studying across disciplines yields new methods of problem solving and an appreciation of our own. This allows us to look at problems from many facets, which improves our chances of ferreting out not just a good solution, but perhaps the best solution. Study *everything* of interest, be it computer science, mathematics, physics, chemistry, philosophy, language, literature, or volleyball!

Resourcefulness is an outcome of this differentiated study. In a value-added sense, it is the ability to bring a new, different perspective to a design problem. The ability to "think outside the box" will make the human factors person stand out on the team. Moreover, the perspective that a multidisciplinary education allows for is a positive addition to every team. It is more efficient, too, to bring a solution from another discipline and adapt it, than to reinvent the wheel in your own discipline.

Diverse experience is the outcome of resourcefulness. The interdisciplinary thought process not only means bringing solutions "across the line" to problems, but also means very different

problems can be solved. It is this breadth, as well as depth, that enhances the problem solving process.

It is important to support as many different types of projects as possible. Preferably, while still a student. This not only makes you a more attractive full time job applicant, but also lends credence to the material you study. The application of your course material to reality certainly makes it more interesting reading. You may also learn that you love/hate some area within your discipline.

Interoperability is the ability to communicate with other team members. Actually communicate effectively and make yourself understood. This is often difficult on multidisciplinary teams because each member has different background, education and perspective, which inhibits communication. If you doubt, do an internet search on "workload"-- it has a variety of meanings, none of them related!

Broad education and experience highlight these communication differences and allow you to reformulate your thoughts and words. This reformulation results in better communication and makes the human factors professional the linchpin of the team. The ability to translate concepts to other team members is critical to any team.

Networking, getting to know many people inside and outside your area of expertise, has many advantages, not all of them social. Through networking you will be able answer questions to which you wouldn't otherwise have an answer. Being able to answer questions outside your immediate area of expertise allows you to diversify your experience (especially if you translate your expertise to your teammates!).

You will never be fully prepared for your career, but with careful anticipation, you will make the transition more smoothly.

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