

What to Look for When Interviewing in Industry and Academia

(Written for the New PhD in Computer Science)

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1 Scope

These notes were written as a personal guide and “prompting sheet” when I was interviewing for industrial and academic positions as a single 28 year old male with a PhD in Computer Science. There are two major sections, the first for industry, and the second for academia. There is no particular order to the points within each major section; some (many?) of the points in industry are applicable to academia. These points represent the questions I have thought of and asked (directly or indirectly) when interviewing. Consequently, the notes are highly biased, reflecting my concerns!

Evaluating the answers you get to these questions is, of course, a highly personal process; beware high pressure sales techniques! Your final choice may be based on something totally irrational.

2 Industry

2.1 Publication and Secrecy

1. Do you mind working on company confidential projects? How much of the company secrecy is paranoia?
2. Will you be allowed to publish your current research in general circulation, refereed and respected journals? Or, will you have to wait until the project you are working on has eventually yielded a product, or the manager gives his/her blessing, or your group has moved onto something else?
3. Does the center encourage outside publication, by providing you with time, support, page charges and such?

4. Does the company require you to publish in internal memorandum and documents? What kind of respect do these documents have in the company? In the outside world (if they are eventually released)?
5. Is merit review based on publications?
6. How much of what you will be working on can be discussed outside the company? Who decides what can be discussed? How would you feel when you talk to an old friend, and couldn't say anything more than: "I work for company X, doing Z?"

2.2 Research Environment

1. Does the research center invite outside speakers to come in and give seminars?
2. Does the center have a program in which its members give informal (or formal!) seminars about their research to everybody else in the center, regardless of their discipline? This tends to encourage multi disciplinary problem solving, and knowledge of what others outside of your group are doing.
3. What kind of technical library does the center have?
4. Are you free to change (sub)disciplines by horizontal transfer within the center? How easy is such transfer? Does it entail getting a new manager?
5. What is the ratio of PhD to MS to BS to support staff?

2.3 Development Environment

1. Is the center development oriented or research oriented?
2. Is the center interviewing you to fill a specific position and specific project? Conversely, do they want to hire you because you are good and can be used as a resource?
3. If the center is developing software, is the software distributed directly to in-house customers, directly to paying customers, or to a buffer in the company that does quality assurance and documentation before the software is shipped, and do customer support after the product is shipped?
4. What kind of lead time do the developers have for the project they are currently working on? For projects they are planning on for the future?

5. When a project, idea or what-not is transferred to development and marketing and out of your hands, will those groups do a good job with your work, represent it correctly and make you proud of its incarnation? Does development have a reputation (be careful here) in botching or improving things?
6. What will happen to the group when the current project is finished? Will the group be broken up and re-assigned to other development projects?
7. Does the center view the current project underway as extraordinary in any way? Eg, “after we finish this one, we’ll settle down and do research?”
8. How much time does the center allow you to work on “hobbies?” A hobby is a technically related side interest (“this looks interesting; I wonder how it really works”) community programming support, work for a professional society (IEEE, ACM), etc.

2.4 Start Up Environment

1. Where did the researchers, engineers, staff and management come from? Why did they leave where they were before?
2. If the ideas for the principle product (or the product itself) were developed someplace else such as at a university, how does the university feel about the company? How does the company feel about the university? What kind of ties do the employees have to the university? What kind of ties or strings does the university have to the company?
3. What direction is the company going to take after it releases its first product? Do they have long term goals?
4. How is the company’s product different from other start ups’ products? What distinguishes the company? How much of what you hear is blind optimism?
5. Did the company grow too fast? Do the managers think the company grew too fast? What about the employees?
6. Who are the customers of this company? How many customers are there?
7. What is the attitude about releasing products that are incomplete, but are perceived as needed to make an impact?
8. Has the company made any blunders, such as pre-release of a product, announced but never delivered a product, or bad management? How do the current managers and employees feel about the blunders? How do the customers feel about blunders? Have the customer’s contracts and delivery schedules been adhered to?

9. How much of a stake do the employees have in the company? How long will it take for their stock to be vested? How is poor (conversely good) employee performance penalized or rewarded? Can low numbered employees be fired for incompetence?
10. How much of the company is owned by the venture capitalists? How many rounds of financing, and for how long, did the company get? What kind of control do the venture people have over the company?
How many shares of stock are outstanding? What fraction of the company are you being offered? What happens when the company goes public? When is the company planning on going public?

2.5 Computing Environment

1. Is there enough computing facilities to solve the problems you want to do in reasonable amounts of time? During the afternoon?
2. Do you wish to work with the same computing environment that you were used to in your previous job? How long will it take to be retrained?
3. Is the computing environment flexible? Is the system manager approachable?

2.6 Personal Growth

1. On what basis are pay raises given? Who and what determines your “merit?”
2. How do the pay ladders between researchers, engineers and managers compare?
3. If you choose to go into management, how does that affect your job future, and conversely?
4. If you go into management, can you easily step back down?
5. Does the company pay for and encourage attending conferences?

2.7 Morale, Stability and Continuity

1. How many people have joined the group in the last year? Two years? Five years? Why did they chose to come here?
2. How many people have left the group in the last year? Two years? Five years? Why did they leave?

3. How insulated is the group from the whims of top level management? Mid level managers?
4. If the “important person” (assuming there is one) were to leave the group, would the entire group fall apart?
5. If the company is hemorrhaging money and manpower in some division, trying to get an important product out the door, will the management bring out the researchers to “temporarily” work on the project until it is shipped?
6. What kind of commitment does management have to the center/group? Are researchers and pure or applied research research an expensive luxury management can afford now, but maybe not in the future during the next recession?
7. Can you extrapolate from the groups last year/two years/five years the same distance into the future? What kinds of big changes in management, products, and research emphasis are foreseen? Is the center/group living in a state of suspense?

2.8 Management

1. Where have your managers gotten their experience? Why did they leave where they were previously?
2. What does management see as its biggest challenge managing the company and the group you will be in?
3. How is the management organized? What is the management fan out?
4. How do the managers get along with one another? Are there turf wars? How consistent are the answers to your questions from one manager to another manager?

2.9 People

1. Do you like the people you interview with or would be working with?
2. Would you be working in the shadows of giants, where you can die for lack of exposure or being squashed? Can you deal with the giant’s (or dwarves) egos?
3. Are your interviewers on normal behaviour, company behaviour, or just themselves? Has the group staged an elaborate charade for your behalf to convince you to come work for them? (Unfortunately, you’ll probably not find out about this until you are already there. Consult the grapevine and read the body language when you are there.)

4. Did people come voluntarily to your research presentation and show genuine interest?

2.10 Work Environment

1. How are the offices organized? Do you need natural light to work by? An outside scene to focus on with tired eyes? Quiet? No disturbances? Private offices? No telephones? Access to other people with problems?
2. Is management willing to purchase special furniture, terminals or equipment for you if you feel it will make you do your job better?
3. Can you work at home? Can you set your own hours? Do other people work the odd hours you may want to? Can you get into the building during odd hours? Is there a general time slot for meetings and seminars when everybody should be around to participate?
4. Does the company provide you with a terminal and modem to take home, with adequate ports into it?

2.11 Community Environment

1. Do you like the surrounding community?
2. Are the “advertised” perquisites of the area pragmatically reachable for an evening or weekend vacation? Is the area a hole or Eden?
3. How far away from work do people live? How do they get to work? What kinds of places do they live in?
4. How much do apartments/houses rent for? How much do condos/houses sell for? How available is the housing? Does the company have a housing service? Provide a reasonable relocation allowance? Provide discount mortgages?
5. What is the political situation of the town, county and state? Are zoning ordinances likely to change? Corruption? Police and fire protection? Insurance rates? Crime?
6. What is it like to commute to work on the worst imaginable day?

2.12 Company Hiring Policies

1. Are you “hired for life,” in that the company will do its hardest to keep you employed with them locally, or by a transfer? (This of course assumes your performance is satisfactory!)
2. What fraction of the company’s business is contract work? Contracts from the Federal Government?

2.13 Company Benefits

These only scratch the surface, reflecting what I have seen, thought of, or is important to me.

1. How long must you be employed before you can take part in the benefits?
2. If you purchase stocks through a stock option plan, how long does it take to become vested? What fraction of the price does the company put up?
3. Is there a company supported savings plan?
4. Is there a company supported profit sharing plan?
5. How many days of paid vacation are there? Does it accumulate? Who determines when you can take it? Can you take leave without pay for personal things, such as extending a vacation?
6. Does the company support you if you decide to return full or part time to school?
7. Does the company have a fund matching program to your favorite university, non profit organization (arts, conservation, etc) or charity?

3 Academia

3.1 The University

1. What is the reputation of the university?
2. What are the opportunities to collaborate with other researchers not in the department?
3. How competent is the administration, at all levels? What kind of administrative turn over has there been in the last n years? Political squabbles or scandals? What is the administrations attitude about computer science? Has it changed dramatically in the last few years (fear of Japanese, computer literacy, etc)?

3.2 Funding

1. What fraction of your funding, and the department's funding will come from state support (public schools only), student tuition and fees, endowments, blanket grants, or grant money you must hustle yourself?
2. What are the major grants supporting the department? What are the principle investigators? Are they meeting the goals they established when they wrote the grant?

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3. If you are funded by DOD (DOE, NSF, etc..) how do you feel (politically, morally, etc) about working for that agency?

3.3 Support and Equipment

1. What kind of services (secretarial, administrative, duplicating, computing, janitorial) does the department supply? What is the staff's morale, and how often has the staff turned over in the last n years?
2. Is the space in the building adequate for the department? Is it well maintained? What kinds of political squabbles are there over space?
3. What kind of equipment is there? How was it obtained? If equipment is donated, what kind of strings are attached?
4. If you want some special equipment, is there money to buy it? If you buy special equipment with grant money, will the rest of the department demand to use it?
5. How does the quality of equipment used by undergraduates compare with that of graduates, staff and faculty?
6. Who maintains and operates the computers? Does the "Computer Center" manage the research machines? Does the computer center manage the machines used to support teaching?

3.4 Teaching

1. How many classes must you teach per academic term? Will you have to teach different classes in one term, or can you teach multiple sections of the same class? (Eg, how much do you have to prepare?) Who decides which classes you must teach?
2. Who teaches introductory classes? Does all the faculty share this load equally? Does the department hire outside teachers to do the scut work, such as generic engineers to teach introductory (Fortran) programming?
3. If you can't get outside (research) support, will you have to teach more classes to earn your keep?
4. How often can you teach classes on your pet subject? What kind of administrivia is involved when you teach pet classes? What happens if you don't get enough students to sign up for the class?

3.5 Committee Work

1. How many university, college, department or division committees are there? How many committees must you serve on? What kind of committees are there? How much time do the other faculty members spend on committee work? Is there adequate and competent staff support for the committees?
2. How is the department chair appointed? What is the chair's tenure? What are the chair's responsibilities?

3.6 Outside Work

1. What are the consulting opportunities in your area? What do the other faculty members do in the way of consulting? Are there faculty members so wrapped in their consulting they have little involvement with the department?
2. How many hours/week of outside consulting work are you allowed to do?
3. If there are no opportunities for consulting (eg, you are in the sticks), are salaries higher to compensate?
4. Are the salaries based on a 9 month year (assuming you'll find outside work for 3 months), or for 12 months? What administrivia is involved in spreading a 9 month salary over 12 months?

3.7 Patent Agreements

1. Who owns the patentable/trade markable things you invent while on the faculty? What kind of a royalty cut do you have?
2. Who owns the ideas you develop when on the faculty, but sell if you start your own company? What share of your profits from your company will the university lay claim to?
3. Does the university actively encourage patenting things? Does the university seek to license their patents? (Eg, how good is their patent office?)

3.8 Students

1. Is the department's focus on undergraduates, graduates, or the faculty themselves?
2. What kind of reputation does the department have to attract students? How many of what caliber students are recruited?

3. How does the department go about recruiting students? Does the department actively recruit them, for example flying them out for interviews?
4. What fraction of the students have fellowship, TA, RA or outside support? What fraction of the incoming students have support?
5. How does the department look after their students once they are arrived? Is there an active graduate student counseling program?
6. How do the faculty members go about “trolling” for students?
7. What is the normal course load for n year graduate students? What is their preliminary and qualifying exam schedule? What is the normative time? How much time can you expect your graduate students to work with you? What is the longest tenured graduate student in the department? What happens if students stay too long?

3.9 Sabbatical and Industrial Leaves

1. What is the department’s policy on sabbatical and leave? Who decides, and on what basis, when you can go on sabbatical?
2. What do other faculty members do on their summers/sabaticals? How many of them have stayed and worked at the university?
3. If you go on industrial leave, what impediments do you face when you come back?
4. How does the university support you on your sabbatical? Full/part salary? Travel expenses? Can you continue to use university facilities when you are on sabbatical? Does the university have any exchange program with other universities, so you can use others’ facilities without charge?

3.10 Tenure

1. Is the position you are interviewing for on the tenure track?
2. How is tenure based? Quality of papers? Volume of papers? Professional involvement? Consulting work?
3. Is the department/university known to be hard for getting tenure in?
4. How many of the faculty members are tenured? In the past n years, how many faculty members have made/been denied tenure? Why did they succeed/fail? How does this compare with the college and university average?

5. Will the university ever renege on you after your receive tenure? How can they fire you? What happens in a budget or student crunch? For public schools, how capricious is the state legislature?