Hiring is Obsolete

May 2005(This essay is derived from a talk at the Berkeley CSUA.)The three big powers on the Internet now are Yahoo, Google, and  
Microsoft. Average age of their founders: 24. So it is pretty  
well established now that grad students can start successful  
companies. And if grad students can do it, why not undergrads?Like everything else in technology, the cost of starting a startup  
has decreased dramatically. Now it's so low that it has disappeared  
into the noise. The main cost of starting a Web-based  
startup is food and rent. Which means it doesn't cost much more  
to start a company than to be a total slacker. You can probably  
start a startup on ten thousand dollars of seed funding, if you're  
prepared to live on ramen.The less it costs to start a company, the less you need the permission  
of investors to do it. So a lot of people will be able to start  
companies now who never could have before.The most interesting subset may be those in their early twenties.  
I'm not so excited about founders who have everything investors  
want except intelligence, or everything except energy. The most  
promising group to be liberated by the new, lower threshold are  
those who have everything investors want except experience.Market RateI once claimed that nerds were unpopular  
in secondary school mainly because they had better things to do  
than work full-time at being popular. Some said I was just telling  
people what they wanted to hear. Well, I'm now about to do that  
in a spectacular way: I think undergraduates are undervalued.Or more precisely, I think few realize the huge  
spread in the value of 20 year olds. Some, it's true, are not very  
capable. But others are more capable than all but a handful of 30  
year olds. [1]Till now the problem has always been that it's difficult to pick  
them out. Every VC in the world, if they could go back in time,  
would try to invest in Microsoft. But which would have then? How  
many would have understood that this particular 19 year old was  
Bill Gates?It's hard to judge the young because (a) they change rapidly, (b)  
there is great variation between them, and (c) they're individually  
inconsistent. That last one is a big problem. When you're young,  
you occasionally say and do stupid things even when you're smart.  
So if the algorithm is to filter out people who say stupid things,  
as many investors and employers unconsciously do, you're going to  
get a lot of false positives.Most organizations who hire people right out of college are only  
aware of the average value of 22 year olds, which is not that high.   
And so the idea for most of the twentieth century was that everyone  
had to begin as a trainee in some   
entry-level job. Organizations   
realized there was a lot of variation in the incoming stream, but  
instead of pursuing this thought they tended to suppress it, in the  
belief that it was good for even the most promising kids to start   
at the bottom, so they didn't get swelled heads.The most productive young people will always be undervalued  
by large organizations, because the young have no performance to  
measure yet, and any error in guessing their ability will tend   
toward the mean.What's an especially productive 22 year old to do? One thing you   
can do is go over the heads of organizations, directly to the users.  
Any company that hires you is, economically, acting as a proxy for  
the customer. The rate at which they value you (though they may  
not consciously realize it) is an attempt to guess your value to   
the user. But there's a way to appeal their judgement. If you  
want, you can opt to be valued directly by users, by starting your  
own company.The market is a lot more discerning than any employer. And it is  
completely non-discriminatory. On the Internet, nobody knows you're  
a dog. And more to the point, nobody knows you're 22. All users  
care about is whether your site or software gives them what they  
want. They don't care if the person behind it is a high school   
kid.If you're really productive, why not make employers pay market rate  
for you? Why go work as an ordinary employee for a big  
company, when you could start a startup and make them buy it to get  
you?When most people hear the word "startup," they think of the famous   
ones that have gone public. But most startups that succeed do it  
by getting bought. And usually the acquirer doesn't just want the  
technology, but the people who created it as well.Often big companies buy startups before they're profitable. Obviously  
in such cases they're not after revenues. What they want is the   
development team and the software they've built so far. When a  
startup gets bought for 2 or 3 million six months in, it's really  
more of a hiring bonus than an acquisition.I think this sort of thing will happen more and more, and that it   
will be better for everyone. It's obviously better for the people  
who start the startup, because they get a big chunk of money up  
front. But I think it will be better for the acquirers too. The  
central problem in big companies, and the main reason they're so   
much less productive than small companies, is the difficulty of  
valuing each person's work. Buying larval startups solves that   
problem for them: the acquirer doesn't pay till the developers have  
proven themselves. Acquirers are protected on the downside, but   
still get most of the upside.Product DevelopmentBuying startups also solves another problem afflicting big companies:  
they can't do product development. Big companies are good at  
extracting the value from existing products, but bad at creating   
new ones.Why? It's worth studying this phenomenon in detail, because this   
is the raison d'etre of startups.To start with, most big companies have some kind of turf to protect,  
and this tends to warp their development decisions. For example,  
Web-based applications are hot now, but  
within Microsoft there must  
be a lot of ambivalence about them, because the very idea of Web-based  
software threatens the desktop. So any Web-based application that   
Microsoft ends up with, will probably, like Hotmail, be something   
developed outside the company.Another reason big companies are bad at developing new products is  
that the kind of people who do that tend not to have much power in  
big companies (unless they happen to be the CEO). Disruptive  
technologies are developed by disruptive people. And they either  
don't work for the big company, or have been outmaneuvered by yes-men  
and have comparatively little influence.Big companies also lose because they usually only build one of each  
thing. When you only have one Web browser, you can't do anything  
really risky with it. If ten different startups design ten different  
Web browsers and you take the best, you'll probably get something  
better.The more general version of this problem is that there are too many  
new ideas for companies to explore them all. There might be 500   
startups right now who think they're making something Microsoft  
might buy. Even Microsoft probably couldn't manage 500 development  
projects in-house.Big companies also don't pay people the right way. People developing  
a new product at a big company get paid roughly the same whether  
it succeeds or fails. People at a startup expect to get rich if  
the product succeeds, and get nothing if it fails. [2] So naturally  
the people at the startup work a lot harder.The mere bigness of big companies is an obstacle. In startups,   
developers are often forced to talk directly to users, whether they  
want to or not, because there is no one else to do sales and support.  
It's painful doing sales, but you learn much more from  
trying to sell people something than reading what   
they said in focus groups.And then of course, big companies are bad at product development   
because they're bad at everything. Everything happens slower in  
big companies than small ones, and product development is something  
that has to happen fast, because you have to go through a lot of   
iterations to get something good.TrendI think the trend of big companies buying startups will only  
accelerate. One of the biggest remaining obstacles is pride. Most   
companies, at least unconsciously, feel they ought to be able to  
develop stuff in house, and that buying startups is to some degree   
an admission of failure. And so, as people generally do with  
admissions of failure, they put it off for as long as possible.  
That makes the acquisition very expensive when it finally happens.What companies should do is go out and discover startups when they're  
young, before VCs have puffed them up into something that costs  
hundreds of millions to acquire. Much of what VCs add, the acquirer  
doesn't need anyway.Why don't acquirers try to predict the companies they're going to  
have to buy for hundreds of millions, and grab them early for a   
tenth or a twentieth of that? Because they can't predict the winners  
in advance? If they're only paying a twentieth as much, they only  
have to predict a twentieth as well. Surely they can manage that.I think companies that acquire technology will gradually learn to   
go after earlier stage startups. They won't necessarily buy them  
outright. The solution may be some hybrid of investment and  
acquisition: for example, to buy a chunk of the company and get an  
option to buy the rest later.When companies buy startups, they're effectively fusing recruiting   
and product development. And I think that's more efficient than   
doing the two separately, because you always get people who are  
really committed to what they're working on.Plus this method yields teams of developers who already work well  
together. Any conflicts between them have been ironed out under   
the very hot iron of running a startup. By the time the acquirer   
gets them, they're finishing one another's sentences. That's   
valuable in software, because so many bugs occur at the boundaries   
between different people's code.InvestorsThe increasing cheapness of starting a company doesn't just give  
hackers more power relative to employers. It also gives them more   
power relative to investors.The conventional wisdom among VCs is that hackers shouldn't be   
allowed to run their own companies. The founders are supposed to   
accept MBAs as their bosses, and themselves take on some title like   
Chief Technical Officer. There may be cases where this is a good   
idea. But I think founders will increasingly be able to push back  
in the matter of control, because they just don't need the investors'  
money as much as they used to.Startups are a comparatively new phenomenon. Fairchild Semiconductor  
is considered the first VC-backed startup, and they were founded   
in 1959, less than fifty years ago. Measured on the time scale of   
social change, what we have now is pre-beta. So we shouldn't assume  
the way startups work now is the way they have to work.Fairchild needed a lot of money to get started. They had to build  
actual factories. What does the first round of venture funding for  
a Web-based startup get spent on today? More money can't get  
software written faster; it isn't needed for facilities, because  
those can now be quite cheap; all money can really buy you is sales  
and marketing. A sales force is worth something, I'll admit. But  
marketing is increasingly irrelevant. On the Internet, anything  
genuinely good will spread by word of mouth.Investors' power comes from money. When startups need less money,   
investors have less power over them. So future founders may not  
have to accept new CEOs if they don't want them. The VCs will have   
to be dragged kicking and screaming down this road, but like many  
things people have to be dragged kicking and screaming toward, it  
may actually be good for them.Google is a sign of the way things are going. As a condition of  
funding, their investors insisted they hire someone old and experienced  
as CEO. But from what I've heard the founders didn't just give in  
and take whoever the VCs wanted. They delayed for an entire year,  
and when they did finally take a CEO, they chose a guy with a PhD   
in computer science.It sounds to me as if the founders are still the most powerful  
people in the company, and judging by Google's performance, their  
youth and inexperience doesn't seem to have hurt them. Indeed, I  
suspect Google has done better than they would have if the founders  
had given the VCs what they wanted, when they wanted it, and let   
some MBA take over as soon as they got their first round of funding.I'm not claiming the business guys installed by VCs have no value.  
Certainly they have. But they don't need to become the founders'  
bosses, which is what that title CEO means. I predict that in the   
future the executives installed by VCs will increasingly be COOs  
rather than CEOs. The founders will run engineering directly, and  
the rest of the company through the COO.The Open CageWith both employers and investors, the balance of power is slowly  
shifting towards the young. And yet they seem the last to realize  
it. Only the most ambitious undergrads even consider starting their  
own company when they graduate. Most just want to get a job.Maybe this is as it should be. Maybe if the idea of starting a   
startup is intimidating, you filter out the uncommitted. But I   
suspect the filter is set a little too high. I think there are  
people who could, if they tried, start successful startups, and who  
instead let themselves be swept into the intake ducts of big  
companies.Have you ever noticed that when animals are let out of cages, they  
don't always realize at first that the door's open? Often they  
have to be poked with a stick to get them out. Something similar   
happened with blogs. People could have been publishing online in   
1995, and yet blogging has only really taken off in the last couple  
years. In 1995 we thought only professional writers were entitled  
to publish their ideas, and that anyone else who did was a crank.  
Now publishing online is becoming so popular that everyone wants   
to do it, even print journalists. But blogging has not taken off   
recently because of any technical innovation; it just took eight  
years for everyone to realize the cage was open.I think most undergrads don't realize yet that the economic cage   
is open. A lot have been told by their parents that the route to  
success is to get a good job. This was true when their parents  
were in college, but it's less true now. The route to success is  
to build something valuable, and you don't have to be working for   
an existing company to do that. Indeed, you can often do it better  
if you're not.When I talk to undergrads, what surprises me most about them is how  
conservative they are. Not politically, of course. I mean they  
don't seem to want to take risks. This is a mistake, because the  
younger you are, the more risk you can take.RiskRisk and reward are always proportionate. For example, stocks are  
riskier than bonds, and over time always have greater returns. So  
why does anyone invest in bonds? The catch is that phrase "over  
time." Stocks will generate greater returns over thirty years, but  
they might lose value from year to year. So what you should invest  
in depends on how soon you need the money. If you're young, you   
should take the riskiest investments you can find.All this talk about investing may seem very theoretical. Most  
undergrads probably have more debts than assets. They may feel  
they have nothing to invest. But that's not true: they have their  
time to invest, and the same rule about risk applies there. Your  
early twenties are exactly the time to take insane career risks.The reason risk is always proportionate to reward is that market   
forces make it so. People will pay extra for stability. So if you  
choose stability-- by buying bonds, or by going to work for a big  
company-- it's going to cost you.Riskier career moves pay better on average, because there is less  
demand for them. Extreme choices like starting a startup are so   
frightening that most people won't even try. So you don't end up   
having as much competition as you might expect, considering the  
prizes at stake.The math is brutal. While perhaps 9 out of 10 startups fail, the   
one that succeeds will pay the founders more than 10 times what  
they would have made in an ordinary job. [3]  
That's the sense in  
which startups pay better "on average."Remember that. If you start a startup, you'll probably fail. Most  
startups fail. It's the nature of the business. But it's not  
necessarily a mistake to try something that has a 90% chance of  
failing, if you can afford the risk. Failing at 40, when you have   
a family to support, could be serious. But if you fail at 22, so   
what? If you try to start a startup right out of college and it   
tanks, you'll end up at 23 broke and a lot smarter. Which, if you  
think about it, is roughly what you hope to get from a graduate   
program.Even if your startup does tank, you won't harm your prospects with  
employers. To make sure I asked some friends who work for big  
companies. I asked managers at Yahoo, Google, Amazon, Cisco and  
Microsoft how they'd feel about two candidates, both 24, with equal  
ability, one who'd tried to start a startup that tanked, and another  
who'd spent the two years since college working as a developer at  
a big company. Every one responded that they'd prefer the guy who'd  
tried to start his own company. Zod Nazem, who's in charge of   
engineering at Yahoo, said:  
 I actually put more value on the guy with the failed  
 startup. And you can quote me!   
So there you have it. Want to get hired by Yahoo? Start your own   
company.The Man is the CustomerIf even big employers think highly of young hackers who start  
companies, why don't more do it? Why are undergrads so conservative?  
I think it's because they've spent so much time in institutions.The first twenty years of everyone's life consists of being piped  
from one institution to another. You probably didn't have much  
choice about the secondary schools you went to. And after high  
school it was probably understood that you were supposed to go to  
college. You may have had a few different colleges to choose  
between, but they were probably pretty similar. So by this point  
you've been riding on a subway line for twenty years, and the next  
stop seems to be a job.Actually college is where the line ends. Superficially, going to  
work for a company may feel like just the next in a series of   
institutions, but underneath, everything is different. The end of  
school is the fulcrum of your life, the point where you go from   
net consumer to net producer.The other big change is that now, you're steering. You can go  
anywhere you want. So it may be worth standing back and understanding  
what's going on, instead of just doing the default thing.All through college, and probably long before that, most undergrads   
have been thinking about what employers want. But what really   
matters is what customers want, because they're the ones who give  
employers the money to pay you.So instead of thinking about what employers want, you're probably  
better off thinking directly about what users want. To the extent   
there's any difference between the two, you can even use that to  
your advantage if you start a company of your own. For example,  
big companies like docile conformists. But this is merely an  
artifact of their bigness, not something customers need.Grad SchoolI didn't consciously realize all this when I was graduating from   
college-- partly because I went straight to grad school. Grad  
school can be a pretty good deal, even if you think of one day   
starting a startup. You can start one when you're done, or even  
pull the ripcord part way through, like the founders of Yahoo and  
Google.Grad school makes a good launch pad for startups, because you're  
collected together with a lot of smart people, and you have bigger   
chunks of time to work on your own projects than an undergrad or  
corporate employee would. As long as you have a fairly tolerant  
advisor, you can take your time developing an idea before turning   
it into a company. David Filo and Jerry Yang started the Yahoo   
directory in February 1994 and were getting a million hits a day  
by the fall, but they didn't actually drop out of grad school and  
start a company till March 1995.You could also try the startup first, and if it doesn't work, then  
go to grad school. When startups tank they usually do it fairly  
quickly. Within a year you'll know if you're wasting your time.If it fails, that is. If it succeeds, you may have to delay grad  
school a little longer. But you'll have a much more enjoyable life   
once there than you would on a regular grad student stipend.ExperienceAnother reason people in their early twenties don't start startups  
is that they feel they don't have enough experience. Most investors  
feel the same.I remember hearing a lot of that word "experience" when I was in   
college. What do people really mean by it? Obviously it's not the  
experience itself that's valuable, but something it changes in your  
brain. What's different about your brain after you have "experience,"  
and can you make that change happen faster?I now have some data on this, and I can tell you what tends to be   
missing when people lack experience. I've said that every   
startup needs three things: to start with good people,  
to make something users want, and not to spend too much money. It's  
the middle one you get wrong when you're inexperienced. There are   
plenty of undergrads with enough technical skill to write good  
software, and undergrads are not especially prone to waste money.  
If they get something wrong, it's usually not realizing they have   
to make something people want.This is not exclusively a failing of the young. It's common for  
startup founders of all ages to build things no one wants.Fortunately, this flaw should be easy to fix. If undergrads were   
all bad programmers, the problem would be a lot harder. It can   
take years to learn how to program. But I don't think it takes   
years to learn how to make things people want. My hypothesis is  
that all you have to do is smack hackers on the side of the head  
and tell them: Wake up. Don't sit here making up a priori theories  
about what users need. Go find some users and see what they need.Most successful startups not only do something very specific, but   
solve a problem people already know they have.The big change that "experience" causes in your brain is learning  
that you need to solve people's problems. Once you grasp that, you  
advance quickly to the next step, which is figuring out what those  
problems are. And that takes some effort, because the way software  
actually gets used, especially by the people who pay the most for  
it, is not at all what you might expect. For example, the stated   
purpose of Powerpoint is to present ideas. Its real role is to   
overcome people's fear of public speaking. It allows you to give  
an impressive-looking talk about nothing, and it causes the audience  
to sit in a dark room looking at slides, instead of a bright one   
looking at you.This kind of thing is out there for anyone to see. The key is to  
know to look for it-- to realize that having an idea for a startup  
is not like having an idea for a class project. The goal in a  
startup is not to write a cool piece of software. It's to make   
something people want. And to do that you have to look at users--  
forget about hacking, and just look at users. This can be quite a  
mental adjustment, because little if any of the software you write  
in school even has users. A few steps before a Rubik's Cube is solved, it still looks like a  
mess. I think there are a lot of undergrads whose brains are in a   
similar position: they're only a few steps away from being able to  
start successful startups, if they wanted to, but they don't realize  
it. They have more than enough technical skill. They just haven't  
realized yet that the way to create wealth is to make what users   
want, and that employers are just proxies for users in which risk   
is pooled.If you're young and smart, you don't need either of those. You  
don't need someone else to tell you what users want, because you   
can figure it out yourself. And you don't want to pool risk, because  
the younger you are, the more risk you should take.A Public Service MessageI'd like to conclude with a joint message from me and your parents.  
Don't drop out of college to start a startup. There's no rush.   
There will be plenty of time to start companies after you graduate.  
In fact, it may be just as well to go work for an existing company  
for a couple years after you graduate, to learn how companies work.And yet, when I think about it, I can't imagine telling Bill Gates  
at 19 that he should wait till he graduated to start a company.   
He'd have told me to get lost. And could I have honestly claimed  
that he was harming his future-- that he was learning less by working  
at ground zero of the microcomputer revolution than he would have  
if he'd been taking classes back at Harvard? No, probably not.And yes, while it is probably true that you'll learn some valuable  
things by going to work for an existing company for a couple years  
before starting your own, you'd learn a thing or two running your   
own company during that time too.The advice about going to work for someone else would get an even  
colder reception from the 19 year old Bill Gates. So I'm supposed   
to finish college, then go work for another company for two years,  
and then I can start my own? I have to wait till I'm 23? That's   
four years. That's more than twenty percent of my life so  
far. Plus in four years it will be way too late to make money   
writing a Basic interpreter for the Altair.And he'd be right. The Apple II was launched just two years later.  
In fact, if Bill had finished college and gone to work for another  
company as we're suggesting, he might well have gone to work for  
Apple. And while that would probably have been better for all of  
us, it wouldn't have been better for him.So while I stand by our responsible advice to finish college and  
then go work for a while before starting a startup, I have to admit  
it's one of those things the old tell the young, but don't expect  
them to listen to. We say this sort of thing mainly so we can claim  
we warned you. So don't say I didn't warn you.  
Notes[1]  
The average B-17 pilot in World War II was in his early twenties.  
(Thanks to Tad Marko for pointing this out.)[2] If a company tried to pay employees this way, they'd be called  
unfair. And yet when they buy some startups and not others, no one  
thinks of calling that unfair.   
[3] The 1/10 success rate for startups is a bit of an urban legend.  
It's suspiciously neat. My guess is the odds are slightly worse.Thanks to Jessica Livingston for reading drafts of this, to  
the friends I promised anonymity to for their opinions about hiring,  
and to Karen Nguyen and the Berkeley CSUA for organizing this talk.