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Our earth is facing global warming Cant we build some tech to absorb carbon dioxide?

Sure, can and have.Â Here's the problem:Â the atmosphere is really, really big. To change the composition, we've had to use hundreds of millions of cars and an awful lot of huge plants putting out a huge amount of carbon for decades.

Doing all of that in reverse would be even harder, since we have to run the entire atmosphere through our scrubbers.Â That means that we'd need literally billions of scrubbers operating for years to even make a dent.Â Who's going to pay for all those? Where is the material going to come from?Â Who's going to operate them?

And then, once you've scrubbed out the carbon dioxide, what are you going to do with it?Â There are a number of options that have been considered for storage or use, but none of them are close to being practical, and all of them take huge amounts of energy.Â And need for energy is what got us into this mess in the first place.

It's far easier to stop scattering carbon dioxide into the air than it is to gather it back in, and we haven't even been able to do that yet.

What are electrical fuses for?

To limit the amount of current in a circuit.

If a circuit runs more current than it's designed for, it will overheat, and could potentially cause a fire.Â A fuse is basically a carefully designed weak point in the line.Â All the current in the circuit has to pass through the fuse.Â If the current gets too high, the wire in the fuse will break, and electricity will stop flowing.Â Thus it becomes impossible for the circuit to carry more current than it's designed for.

According to Newtons first law of motion a rocket does not need fuel to travel in space till forever once it is given an acceleration as there are no forces in

space blocking its motion Why is it not true?

Two points.Â First, once you're done accelerating, you don't need to carry fuel.Â Look at the *Pioneer* probes.Â They achieved escape velocity, and now are traveling indefinitely outward.

The thing is, that only works if you want to keep traveling forever.Â If you actually want to go somewhere, you need to stop when you get there, which means you need enough fuel to decelerate on the other end.

The point, however, is that rockets *don't* have to continuously fire in space, if they can get out of whatever gravity well they're in.Â The problem is that getting out of those gravity wells takes a huge amount of fuel.

What kind of knowledge cant we gain from the internet but we can gain only from books?

There is an enormous amount of knowledge that you are extremely unlikely to get from the Internet, at least at the present time.Â

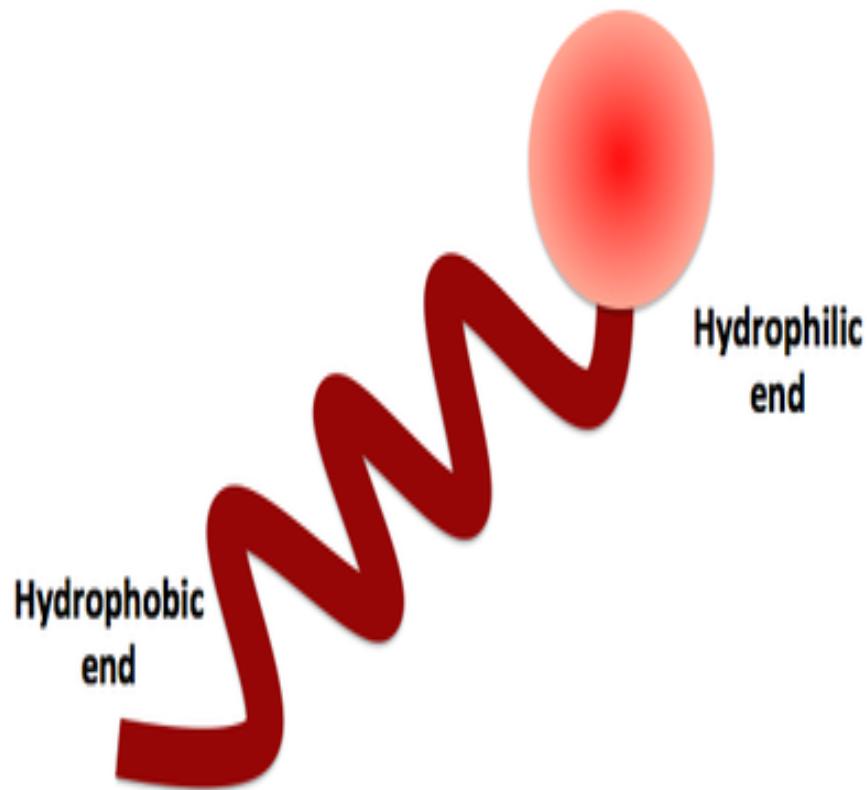
1. For many areas of study, there is no substitute for working through material systematically with the guidance of a textbook and a good instructor.Â The textbooks are likely not yet online.Â The good instructors are likely online, but there aren't yet really great institutional arrangements to interact with them in a systematic way over time.

2. For many physical skills, you can't learn how to do them without actual physical practice, which the Internet can't give you.Â I haven't googled "How to play tennis" but I assume there is a lot of helpful material - and you could read it for hundreds of hours and still be completely useless on a tennis court.

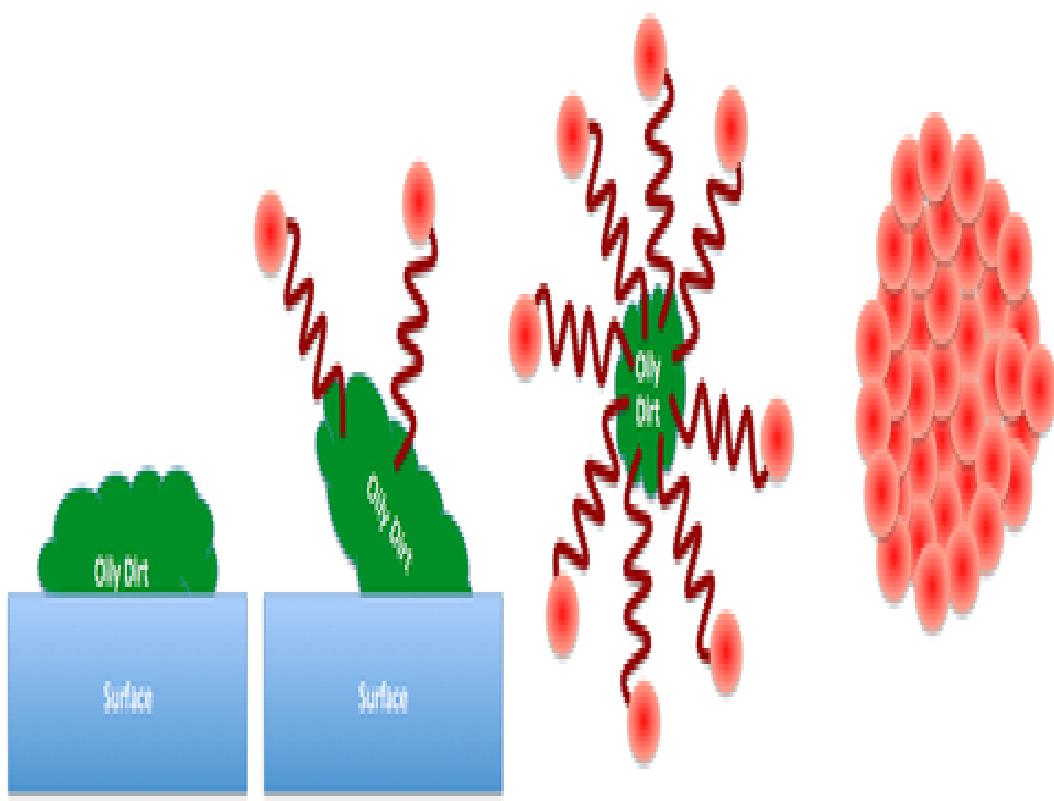
Many other examples immediately spring to mind.Â PhD level work in most fields involves artisan-level training that is not easily replicated online, for example.

How does soap work as a cleaning agent?

A soap molecule is a long hydrocarbon chain with a hydrophilic (water loving) end and a hydrophobic (water fearing) end.



The hydrophobic end is lipophilic (oil loving). When the soap molecules come into contact with an oily dirt, the hydrophobic ends stick to the dirt while the hydrophilic end sticks to the water. Motion causes the water to move, pulling at the soap molecules, which pull at the dirt. As more and more soap molecules attach to the dirt it weakens its grasp on the surface.



Soon the oily dirt is pulled off of the surface.Â It is then quickly encircled by soap molecules until they form a shell around the dirt.Â This shell is called a *micelle*.Â Now we have an object whose exterior is water loving, meaning the soap has taken an object that was insoluble in the water and effectively made it soluble by producing an emulsion suspended in water.Â

The water is then rinsed away, taking the soapy dirt with it and leaving behind a clean surface.

Why was Martin Eberhard forced out of Tesla Motors?

I can only imagine the story is much the same as in any other start-up going through a rough patch:

1.Â Elon Musk wanted to invest, but not run, Tesla.Â He was not an employee or CEO at first -- only Chariman.Â He staked the capital in an inexperienced, but passionate, first-time CEO with limited management experience.Â [This is not the

first time this has happened in the start-up world.]

2.Â The founding team had no real background in automobiles, and the project came in way late, and way over budget (as often is the case): [Lotus Position | Blog | Tesla Motors.](#)Â It appears the budget planning process under Eberhardt was poor and the true Roadster COGS vastly exceeded the purchase price for the Roadster.

3.Â Fair or not (probably fair), Musk lost confidence in Eberhard for being late and over budget and inexperienced.Â Investors know cr*p happens, but they have to believe the CEO is doing the best job possible when it does.Â That wasn't the case here.Â Musk realized as the largest funder of Tesla, something had to be done, otherwise it would run off a cliff and die.Â

4.Â After briefly bringing in another outside CEO (Ze'ev Drori), it appears it became clear no one else was going to fund Tesla without further changes.Â So the answer ended up being that Musk needed to plow all of his liquid fortune into the company, and take over as CEO.Â

5.Â The fact is, it was the right decision.Â Tesla did almost die in the financial crisis, and ended up needed numerous lifelines, including not just Musk's entire liquid fortune, but also from Mercedes and Toyota, which I am confident only someone of Musk's charisma and passion could pull off.Â Beyond that, the company has needed to raise over a billion dollars in the equity and debt markets and via loans.Â

It's highly, highly unlikely Eberhard could have pulled that off.

My facts may be off, the only point I am making is it's the Same Old Start-Up Story of a Passionate, Very Smart, But Inexperienced Founder who Missed All the Milestones and Blew All the Cash.



3. California Governor Arnold Schwarzenegger discusses the Roadster with Tesla Motors chairman Elon Musk and company founder Martin Eberhard at the Roadster's premiere event on July 19.
(photo by R.J. Muna)

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As first time entrepreneurs what part of the process are people often completely blind to?

I think one of the toughest adjustments to make, particularly if you are coming from an established company, is entering a world where you have infinite needs from people around you, and no one needs you. That predicament in some ways defines the challenge of a startup. You have an idea, but no leverage, so you have to start making water into wine.Â You have to attract a team, attract money, attract customers etc. with nothing more than your vision and powers of communication. Entrepreneurs who succeed are those who don't get demoralized by that asymmetry, but instead view it as a challenge. Occasionally, someone hits on an idea that is just so brilliant or timely that it quickly creates leverage, but that's rare.

Why in the present times dont we hear of some of the new scientists like Einstein Feynman Faraday

Has the field of research lost its sight somewhere?

How are people able to afford purchasing a home in Palo Alto?

Yes, **the math does not work.** Not even remotely. It's even worse than the math you cite.

In fact, you can often rent a home in Palo Alto for a fraction of the mortgage payment on it. I recently saw a home listed in Palo Alto for \$10m for sale or \$10k a month in rent. You do the math. The property taxes alone on that house will exceed the rent payments.

That's what happens when you have very low supply, high demand, and an emotional attachment to ownership well beyond, and indeed divorced from, the pure economics of it.

It's why you see so many entrepreneurs in Palo Alto. They just want something for all their hard work. They don't care if the math doesn't make sense. They killed themselves for a decade+ building something. Now, they just want a house, exactly where they want to live. They don't care about the value, as long as in absolute terms ... they can afford it.

Yes, Mark Zuckerberg paid \$8m or so for a unfancy house in Palo Alto that would barely get any attention almost anywhere else in the country. But he could have afforded even more. :) He 'overpayed' though at that rate vs. economic value. It's what he wanted, felt comfortable in.

After all, there's only so much cr@p you can buy in the world that matters. A house, a car, a few iPads, some clothes. So on some level, all you are really working for once you can take care of your family and yourself, economically, is just a house.

Unless you want jets and yachts -- that's a different league.



What popular startup advice is plain wrong?

To persist and never quit.

Pivot early and often as soon as you have solid evidence that you cannot get there from here.Â Â Otherwise you can waste years of your life with something that will never be big.

(Based on a true story)

How long was the development cycle for the initial launch of Quora?

<http://www.quora.com/Charlie-Cheever> and I started most of the work in April 2009. I had some prototype code from before that, so we weren't starting from zero but it was pretty close.

<http://www.quora.com/Rebekah-Cox> joined in June to do design and front-end work. <http://www.quora.com/Kevin-Der> joined as an engineer in September. We started rolling out the beta beyond friends in January 2010 so that ends up being nine months of work by Charlie and me, seven months by Rebekah, and four months by Kevin. If you really want to calculate man-hours, I'd estimate we put in an average of 60 hours of work a week, but I think that's not the best way to quantify the development cycle.

The product development process wasn't "here's a spec, let's spend nine months implementing it." We iterated continually, tried out lots of ideas, and changed plans a bunch of times. We also built a lot of infrastructure during this period that helped us build a good initial product. It made things easier for us going forward, and will pay off its investment over time.

Also, during the first nine months, we spent plenty of non-real-work time on recruiting, getting the company formally incorporated, finding office space, getting the domain name, setting up payroll and benefits, and lots of other small things.

Is it hard to build market and maintain a web app that makes at least 1 000 a month?

This is a very interesting question, and the responses are very revealing. It is instantly clear who knows what they are talking about.

My litmus test for sorting out those who have actually tried to make money online and know what they are talking about is mention of the word "churn." The hard part is not getting to \$1000 a month. It is staying there. Actually "staying there" is much harder than either "going beyond" or "falling back to \$0" because Web/digital products (unlike say a baker's shop) are fundamentally not stable cash flow generators. They are unstable in either good or bad ways. The only thing worse than having a \$1000/mo idea fall back to earth by itself is to watch someone else with more drive taking a clone to \$10,000/mo and killing you in the process, because YOU didn't have the drive to run with it. This is a fundamental weakness of lifestyle business ideas. Good ideas have a tendency to quickly break the 4-hour-work-week effort ceiling. Bad ideas

fall back to earth.

I've "gotten there" with 2 different products in the last two months. The reason I am not shouting this from the rooftops and trying to sell my "formula" to others is that I haven't yet solved the problem of how to stay there with either product with sufficiently low costs on my side.

Calibrating Expectations

From the question it sounds like the intent is to have a passive stream of income (a common lifestyle business goal). So to qualify as "sufficiently low costs" the ongoing effort should be less than the hours spent at a regular day job to generate \$1000/mo. Assuming an \$80k entry level s/w developer job for 2000 hours a year (fifty 40 hour weeks), the number to beat is about \$40/hour. That's about 25 hours. If you are spending more than 25 hours a month supporting this app, you're losing. Sure you *could* consider intangibles like building up a market that trusts you for future apps, a brand, having independence from pointy-haired bosses etc., but those come later. The baseline must be beating the lifestyle you could support in immediate cash flow terms, compared to a regular job. Gravy comes later.

\$1000 per month in a 100x\$10 or 50x\$20 configuration *sounds* simple. It is not. Development work for an average app, given the idea, is not particularly hard engineering, so if all you needed were the *engineering* chops for it, you should see one out of two engineers quitting their day jobs to do this. Why don't we see that?

It's because the hard part is not the engineering.

How Hard is the Marketing?

Do the math. Whatever your main acquisition channel, after back-calculating "new user impressions" from current subscription rate, you'll likely be left with something like needing a blog or e-newsletter that hits 100 *new* people a month in order for you to acquire *one* new user (example: if referrals via your e-newsletter are your main mechanism, and 1 in 10 users forwards your newsletter to someone new, and 1 out of

THAT 10 is likely to sign up... you're at a 1% conversion rate. This is VERY optimistic. Search marketing or blog marketing have similar profiles).

If your app hemorrhages existing users at the rate of 20%, you'll need 2000 new users exposed to your pitch in order to replace the users you are losing.

That is a VERY tall order. Since most marketing channels are designed to simultaneously serve acquisition and retention needs, it is easy to let the numbers fool us. We report acquired numbers (subscribers). What's more, the acquisition/retention tradeoff is very hard to manage on a single channel. The more you try to make your marketing appeal to new audiences, the less it will serve retention needs, and cause hemorrhaging.

Maintenance

What about maintenance? Well, even for a non-tech product that relies on 3rd party tech, like my wordpress blog, simply keeping the software and plugins up to date and compliant with the latest releases of related software... that can take a couple of hours a month. What do you think it is going to take to support software YOU wrote? What about random spikes, like an API you rely on being completely rewritten, requiring you to rebuild the whole app? What if a competitor app pops up that does better, forcing you to re-engineer and fight back? Trust me, if there's a market, there will be competition. Even if your app discovers the market, merely the fact of you making a steady \$1000 a month will attract hungrier people, willing to do better for less money to take away your market.

There's a lot hiding under "maintenance."

Between managing churn via continuous marketing, and doing frequent updates and maintenance to keep up with technology and the competition, you're easily talking something that takes more than 25 hours a month. More like 40. Or a 25% time commitment. Which brings your hourly rate earnings to \$25. And don't think moving to Bali will make that \$25 stretch further. Your marketing will grow harder in proportion to your distance from the American market you are serving.

And Oh Yeah, It's *Boring*

Did I mention that sustained marketing and maintenance are among the most boring types of work, especially for someone who gets kicks from building new stuff?

So since the effort investment is roughly:

marketing >> maintenance >> original engineering

you are talking a very boring 25% job that pays less than a day job for the same skills.
(assume each >> to be a a 10x increase.)

In other words, the initial developer's work is the trivial part of it. Marketing and maintenance are the really tough parts.

This explains the most common failure mode: having a good initial product and a great launch month, followed by a flame-out.

So Should You Do It?

After that very cynical analysis, it may surprise you to hear my recommendation. You should **STILL** do it.

Here's why: something like this is a GAMBLE.

A regular job has a higher guaranteed upside that hits its ceiling very quickly. Even if you beat this scenario 3-4x and are in a job that pays \$120-\$160/hour, you'll never get off the treadmill, because the treadmill is designed to never let you off. It is Hotel California. If you are making \$300k, chances are you are a mission-critical linchpin, and The Man will figure out a pattern of incentives to keep you where you are.

Your app... 90% chances are it will perform as I outlined, even if you do everything right to the best of your abilities. In other words, 90% of the time, you will do (say)

80% as well compared to a regular job with the same effort. So the contribution to a normalized expected value computation would be: $0.9 * 0.8 = 0.72$.

But there's a 10% chance that you'll hit upon an idea that just hits some market nerve and takes off on a wild trajectory of success, requiring no marketing and escalating inbound demand, and growing so fast that the competition cannot catch up (if you are willing to get off your lazy behind and tighten your grip on the tiger's tail that is; otherwise someone will very kindly take your market away from you).

There is almost NOTHING you can do to make this happen, other than to place as many bets as you can, as frequently as you can, without shortchanging any of the ideas on the effort side.

But if one of the ideas takes off, you're done. Screw the rest of the portfolio. Sell or abandon them. Double down HARD on the oneÂ that's taking off. Ride it all the way out of the crappy financial prisons that counts as "life" for most of us.

So it REALLY only comes down to a SINGLE question.

Do you feel lucky, punk?

Why does water put out fire?

It doesn't put out the fire directly, it stops more fire from forming.Â You can spray a stream of water through a flame all day, and the flame will continue to burn.Â In order to put out a fire with water, you need to soak the fuel.

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Now, this only works on certain types of fire.Â Electrical fires and grease or oil fires can't be put out with water, and it's incredibly dangerous to try.Â Water only works when you have a solid fuel that will absorb water, such as wood, paper, cloth, etc.Â With those things, the main effect of the water is to lower the temperature.Â When water hits something of very high temperature, it boils, and by boiling it absorbs a lot of heat, rapidly cooling the fuel.Â When the fuel is no longer hot enough to burn, the fire goes out.Â Larger fires require more water to cool everything down.

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A secondary effect of the water is to block the flow of air.Â When porous material gets soaked with water, the passages for air get blocked, so not as much air is able to get through.Â In situations like that, you can effectively smother a fire with water, making it impossible to burn.Â Between those two effects, water is one of the simplest and most effective means of putting out traditional fires.

Why will art be more important than systems thinking in the future?

As computers get better at systems thinking, advanced systems thinking in humans will be less important.Â It will still be important and worth knowing, but an excellent systems thinker will not have the same advantages in the next 100 years as she had in the last 100.

In the U.S., the test that is most associated with systems thinking is the SAT (the test that massively influences college admissions).Â In the past, every 50 points you scored on the SAT had a huge affect on your life.Â Someone who scored 1500 was likely to be much more successful than someone who scored 1200 (of course, there are plenty of exceptions).Â

In the future, with computers being able to do more and more systems thinking, people will likely be judged less on systems thinking and more on creativity.Â A base knowledge of systems thinking will still be really important but the gains in each additional SAT point above a good base (let's say 1200) will not be as life determining.Â

Creativity is much less likely to be chipped away by computers and thus will be more important in the new world.Â "Art" may or may not be important, but I'd bet on creativity and left-brained thinking in a world where computers are getting better and better at what they do.

Is it worth it for a startup to buy a great domain name for 500 000 given an initial 1M investment from an

angel?

Your startup is doomed.Â I am willing to bet money on this, like maybe \$50 or so.

You are not in Silicon Valley or NYC (or you would have said so), meaning your chances of acquiring early-adopter consumers is exponentially lower.Â One way to increase your chances of success more than any domain name could would be to spend the money moving your team to one of these two locations.

Further, you believe that a "word" domain name compared to a non-name domain name is superior to branding to the degree that you are even considering spending \$500k on it?Â Do you know how much implementation and actual sales and marketing can be had for \$500k?Â Or even \$220k?

Let's say that you spend the first \$500k on product implementation and marketing.Â Is having that domain name worth *twice again* as much product implementation and marketing?Â Not only that, but if your marketing has some viral component, doubling your spending might give you well more than 2x the return.Â Is the domain name worth 2x all the rest of your work?

I know that you're not forking over the full \$500k now, and that it's "only" \$220 on signing.Â But \$220k is still a lot of useful capital.Â I wouldn't even say that \$80,000 is worth it for a branded consumer startup - you should be spending less than \$10k.Â A \$10k domain name and \$990 of money to spend on product implementation and marketing efforts is a much better bet.

The best investors will think you are dumb, but if you achieve traction you will still get some mediocre investors.Â However, I think in all likelihood your startup is probably doomed because you are even seriously considering this question.

What does consolidation mean in financial terms?

Radha and Krishna are two singles living in their own apartments. They had their own cars, cooked their own food, bought their own furniture. One day they began dating and figured they should marry. In corporate terms this is called **M&A - Mergers & Acquisition**.

After the M&A;, they figure out that they have a lot of duplicate things. They don't need 2 homes, 2 TVs, 2 cars, 2 sofas and so on. They sell off all the excess things and repay a good chunk of their loans with it. This process is known as **consolidation**. They also figure that they need only one person cooking at any point of time and the effort for cooking for 2 is not much more than the effort for cooking for 1. This is called **economy of scale**.

By moving together, they build a stronger position against competitive threats in the society. After a while, they try and conceive. This baby is called **synergy**. In general synergy applies anywhere you get $1 + 1 = 3$.

If Apple ever releases a TV the screen itself what will be so magical about it?

Many people have said that Apple won't enter this market since it is a crappy, commodity, low-margin business.

But look at the other markets Apple is in:Â PCs, Phones, MP3 players, and, well, monitors.Â Those are crappy markets, too, except for Apple's slice of the market.Â Apple generates huge profits where others flail because:

Their products sell at a premiumThey leverage Apple's highly efficient supply chain and purchasing powerThey sell direct to consumersEach product drags along content and apps as well as other products in the Apple ecosystem.

There is no reason they can't run this exact same play with iTV and finally take control of your living room.Â And it will be awesome.

Hardware

Take a look at the Apple iMac and Cinema Displays.Â Bright, high-res screen, clean industrial design, minimal buttons and ports.Â I'd certainly pay a premium for a TV with the same design principles.

iTV will have no buttons and few ports, all gracefully hidden somewhere accessible but invisible. It will have some kind of advanced glass that only Apple knows how to make.Â

It will not have a tuner.Â It will not have a DVD player.Â It will be designed to be the only box you need in your living room.Â It will include a coaxial cable port to work with cable boxes and a cable card slot, but reluctantly.Â Apple will treat Comcast as a necessary evil, just like they treat AT&T; today.

It will discourage cables.Â Makers of amplifiers and speakers will start to support AirPlay for a completely wireless living room.Â

It will have a microphone and video camera.Â It will have Facetime.Â Your family will be able to sit in the living room and videoconference with Grandma on her iPad.Â You'll be able to run Skype.Â Families will use their iTVs and iPhone and iPad as intercoms around the house.

Software

Apple TV and iCloud and iTunes will be built in.Â By then Apple will have opened up Apple TV to iTV-specific apps, so the vision of apps in your living room will finally be real.Â And with iOS 5 you can now throw any content from an iPad or iPhone onto the screen via AirPlay, which means games, news, and any other app that you can access on your iPad thrown up on your wall in full color.Â Goodbye Wii.Â Hello Cut the Rope.

It will use an iPod Touch as the remote control.Â The remote control app will be gorgeous and intuitive.Â You'll search for programming, download content, and change channels just by swiping an iTunes-like UI.Â Instead of channel numbers you'll get overflow-style thumbnails of the content on that channel at that moment.Â

You'll be able to click on a show and see other episodes or set up recordings.Â

You'll be able to run the remote control app from anywhere on any iOS device to set up the programming you want to have available on your iTV when you get home.Â You'll be able to watch a movie on your iPad, hit pause, then resume watching it when you get home to your iTV. If you have two iTVs you'll be able to pause programming on one and pick it up on the other.

"Interactive TV" will finally become a reality after years of failed attempts by folks like Microsoft and Google, thanks as much to HTML5 as to Apple.

Content

It will have iTunes and a DVR built in.Â Plus Netflix and everything else that is on an Apple TV today.Â iCloud will sync all of your content and settings.Â It will sync your photos and your music the same way Apple TV does now.

Facebook, Twitter, Pandora, Spotify, all of the major web services will create iTV-optimized apps or HTML5 sites.Â You'll be able to tweet what you are watching.Â You'll be able to see what your other friends are watching.Â You'll share images or videos you pull off of your TV onto your Facebook, Twitter, or favorite photo sharing site.Â You'll capture a frame of Snooki on Jersey Shore, Instagram it, then share it on your Facebook wall. You'll Groupme your friends during commercial breaks.Â You'll play Angry Birds once you lose interest in the show.

The networks will start to release HTML5 versions of their shows, leading to a number of innovations in advertising.Â Ads will be directly targeted at you, Minority Report style.Â You'll click on a commercial to take you straight to the Amazon page to buy the product right now at a discount.Â You'll pull up a Twitter stream discussing the show right alongside the show itself.

You'll be able to use the microphone to talk to the Siri-powered search app.Â It will bring up maps, weather, program guides, all just by talking to your TV or iPod remote.Â You'll tell it to Facetime a friend or find a favorite show.

Once you have a house full of iTVs, iPads, and iPhones, you'll start to give up your Tivo, your Wii, your cable box, your DVD player, your phone.Â You'll be living in a Steve Jobs world.

And you will like it.

[Note: this answer is way out of date...I have a new one percolating, stay tuned.]

Why is Safari called Safari?

Many of Apple's software products are named after a loosely similar real world activity, item, or concept. Front Row, Photo Booth, Keynote, Time Machine, GarageBand, and more, are all examples of this.

A safari is an overland exploration of Africa and its wildlife. Safari is a way to explore the web.

You might have noticed that the icon itself is a compass:



So: the theme of Safari's branding is **exploration**.

What do we currently know about the history and future possibility of life on Mars?

My PhD work is on Mars climate! The prospects for indigenous Mars life are dim and fading, but there don't seem to be any technical showstoppers to modifying Mars in order to establish Earth life there.

Short answer: Life requires liquid water, organic carbon and redox disequilibrium, at least on Earth. We are almost certain that today's Martian surface is sterile by this definition, and it is likely that today's subsurface is also sterile. Ancient rocks show evidence consistent with prolonged intervals of intermittent surface liquid water early in Mars' history. However, the total duration of those episodes seems to have been short. The ancient subsurface is a wildcard - there seems to have been lots of water, perhaps for a long time, deep in Mars' crust soon after it formed.

Mars' surface environment is incredibly hostile. Temperature is the first-order problem: polewards of 60 degrees, which is the only place to find near-surface ground ice, temperatures never get above 225K. Water activity's negligible. Earth microbes that get this cold don't reproduce and barely metabolize. Mars has no ozone shield and surface UV levels kill 99% of exposed *Bacillus subtilis* spores in 15 seconds. Mars has no magnetic field and high-energy charged particles penetrate to the surface at nasty, but probably survivable, levels. The soil chemistry conspires to destroy organic matter -- not sure how, but oxidation by perchlorate might do the trick. Mars has ice ages that redistribute water ice over the surface, and it does seem to occasionally melt, but only on steep slopes, in small patches, for a few days every thousand years, and in a trickle.

Ground-penetrating radar has all but ruled out buried aquifers down to 11 km depth. This was surprising - theory predicted a shallower water table. It's possible that aquifers exist, deeper down. But revised models now suggest that Mars lost all its crustal water billions of years ago, leaving only surface and near-surface ice today.

Lakes, deltas, meandering rivers, alluvial fans, erosion, valley networks, aqueous minerals: the ancient Mars surface has unambiguous evidence for flowing liquid water. It's very difficult to tell if these formed by rainout from short-lived global steam atmospheres created by impacts, from precipitation that was both short-lived and localized, or from a globally prolonged wet period. Only the last is good for life. Recent work shows that some deltas formed entirely in just 10 years, strengthening the impact-greenhouse idea. Physical erosion even on ancient Mars was very limited, and chemical weathering barely got started, also hinting that wet events on the surface didn't add up to much.

Clay minerals formed in much of the Mars subsurface, but only in very ancient rocks. Liquid water is needed to make clays, so the observations support models of an early global aquifer on Mars. Deep basalt aquifers on Earth support life, so Early Mars could have too. But there are two huge problems. All our models for the origin of life involve the surface environment - it's just easier to get rich organic chemistry at the steep redox gradients involved in that interface. Second, meteorites provide thousands of samples from asteroids that had ancient, carbon-rich aquifers that

persisted for millions of years. And not one of them contains life.Â

NASA and ESA missions over the last 10 years figured almost all of this out. NASA's next mission, a rover, is going to ancient surface sedimentary rocks to try and constrain the chemistry, climate, and duration of the wet intervals.

Switching gears, to establish a biosphere on Mars we must:- (1) warm the planet; (2) cut the surface UV flux, and (3) deal with soil chemistry.

Solving the warming problem optimally involves super-greenhouse gases. These have been identified by Caltech and Ames, see

<http://adsabs.harvard.edu/abs/2005JGRE..11003002M>

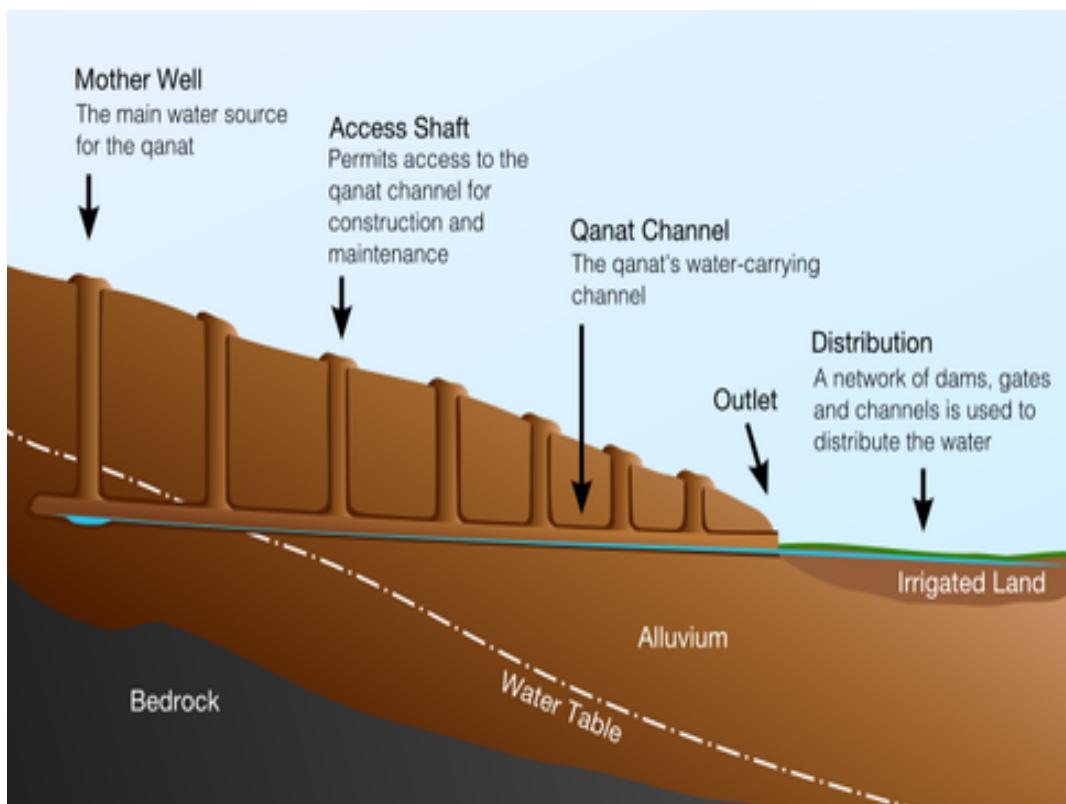
Surface flourine deposits would be useful as feedstock, but we have already located extensive chlorides at 10-20 wt %. The most natural way to deal with the UV problem is to build an ozone shield. Enough ozone would form naturally if atmospheric oxygen were raised to the percent level. Photosynthesis did this job on Earth, but would not work on Mars -- unlike our ocean, Mars sand is just as opaque in the visible as in the UV. Perchlorate reductase is a promising enzyme to get around this catch - it converts ClO₄ (of which there's plenty on Mars) to O₂. I don't think we have enough information about soil chemistry to go after that problem yet. We do know that the soil is oxidizing and possibly toxic. As for nutrient levels, Mars Exploration Rover instruments are insensitive to carbon and nitrogen levels. Phoenix returned some data on ammonium, but none on phosphorous.

What are some fascinating examples of ancient or medieval technology?

Ancient civilizations did their most impressive work with water. *Hydraulic engineering* is where the Egyptians, the Persians, the Greeks, the Romans and others devoted the most resources by far and they had some impressive achievements to display.

You will find a lot of information in this Quora blog: [Pre-Modern Water Engineering](#). In there you will learn about , *sakia*, *hypocausts* and how natural water flow can be used to do useful work, from pumping water, to producing salt.

I was truly impressed by the sheer scale of the work involved in the construction of qanats, but also with their simplicity and effectiveness as a solution to bring water from the aquifer to the surface. A Persian invention, quite obscure, but also very important.



A schematic of a qanat. Image source:

One particularly interesting example from an engineering viewpoint is the , a 1036m long aqueduct built in the 6th century BC in Samos and kept in use for 1000 years. The fascinating thing about this is the way that Eupalinos managed to make the two sides of the excavation meet, not to speak of the accuracy of the tunnelling work itself.

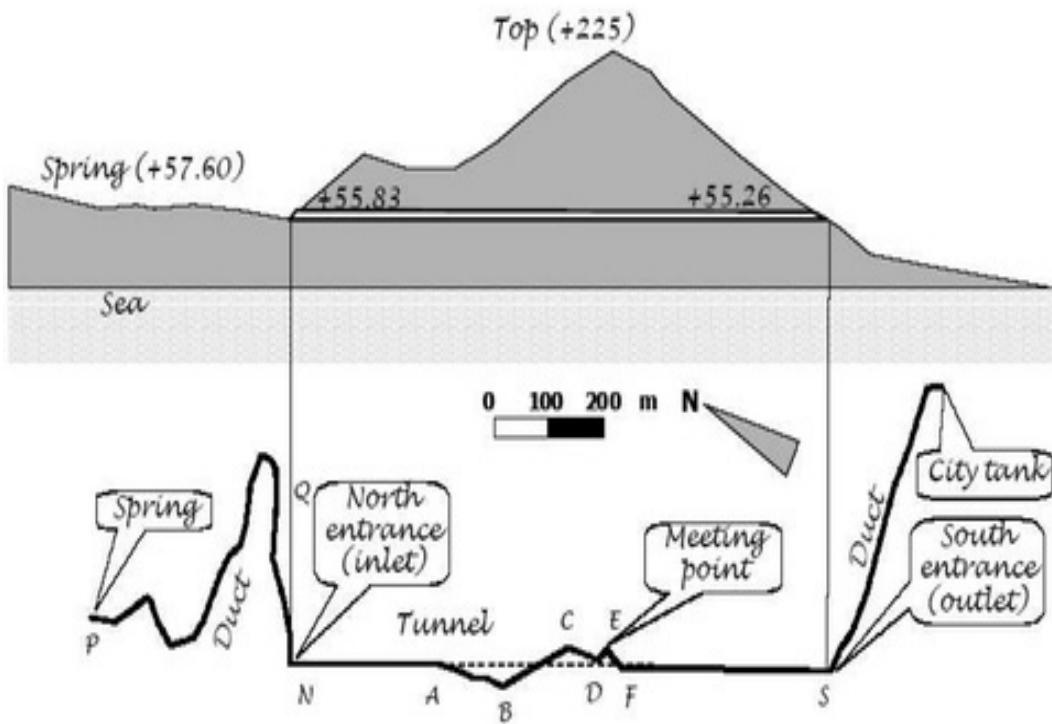


Image source and more info on the tunnel:

Apart from water engineering, ancient *weapon technology* provides some fascinating feats. Among them, I am impressed by the sheer extravagance of the ultimate siege engine of the antiquity: the .

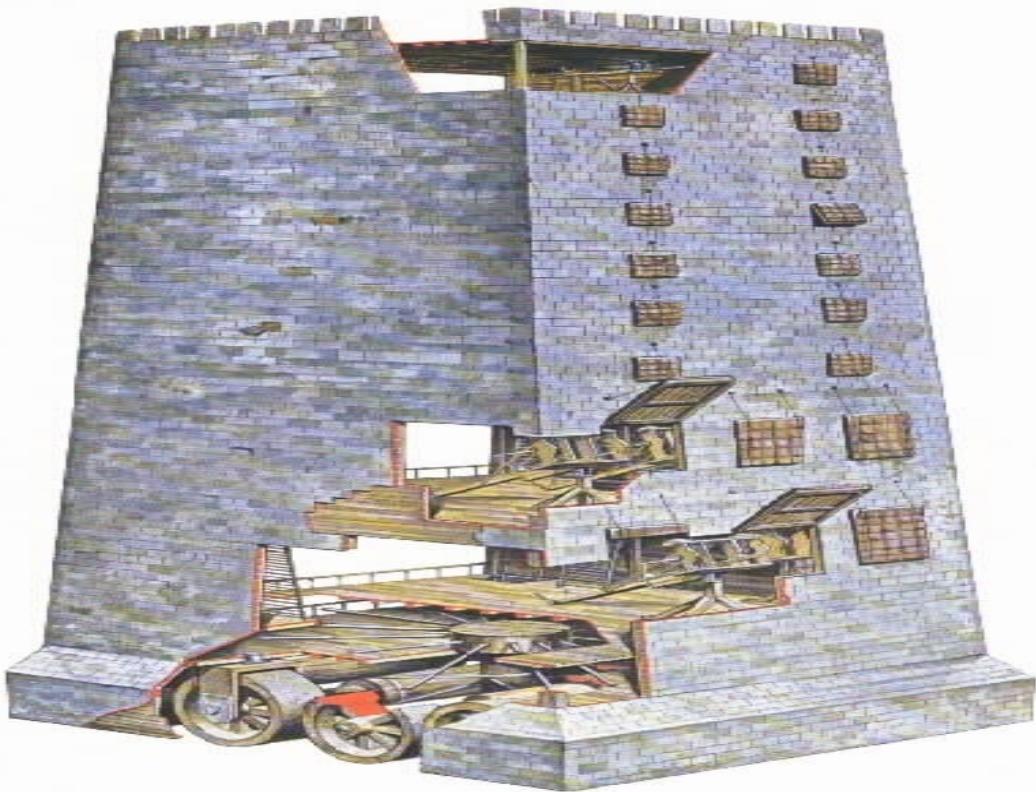
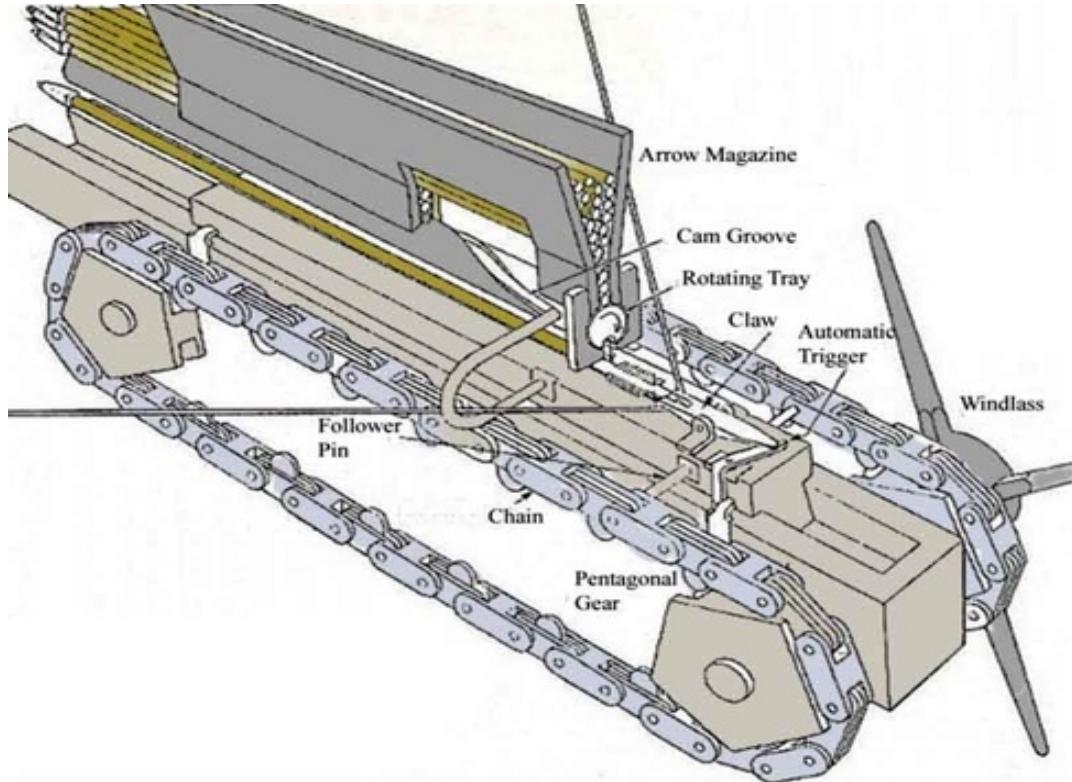


Image source and more info on the siege engine:

What I found impressive, apart from the size, weight and number of men that manned it, is that it was *armored* with iron plates on 3 sides and that its enormous wheels could be *steered* with an enormous capstan, moved by 200 men.

Another cool gadget ancient siege engineering had was , a repeating ballista. Medieval Chinese armies made extensive use of the [repeating crossbow](#), aka the "chu-ko-nu". The former operated on a different principle (chain drive) than the latter (lever operated).



Chain drive of the repeating ballista. Image source and more info on the siege engine:

This answer also would not be complete without mentioning the .



© Antikythera Mechanism Research Project

X-ray imaging of the main part of the Antikythera mechanism. Image source and more info on the mechanism:

The astronomical and mathematical knowledge, as well as the engineering genius and the exceptional metalworking craftsmanship that went into making this are simply unbelievable, for something that was truly 1500 years ahead of its time.

Will water become a trade commodity in the future?

Water is becoming more valuable which increases the incentive to trade, so yes more water will be traded in the future.

In the United States, we have farmers in California using lots of water in low-value uses when consumers and manufacturers would be willing to pay a high price to use that same water. Thus large potential gains from trade exist but the transaction costs are very high because property rights are complex and often unclear. Quite a bit of water trading does occur in some states, however, such as Colorado, Nevada and Arizona.

Chile has a national and well-developed system of water markets and trading - the place to look for the future.

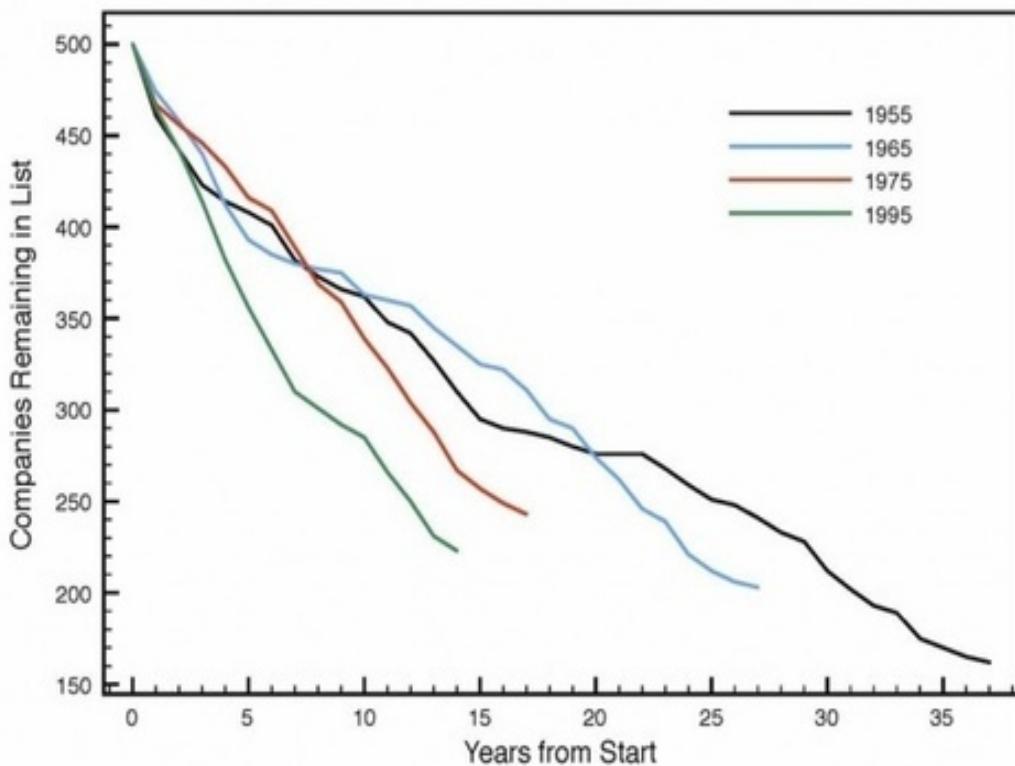
Note that we trade a lot of water in ways that are not obvious, e.g. when we trade fruit and vegetables we are trading water. Even when we trade silicon chips we are trading water. It can be cheaper to import the products we want rather than the input (water).

By the way, in the 19th century before refrigeration was well developed, there was a market in ice with ice from Boston being shipped as far as India.

Could Apple ever fail as a company?

Yes, in fact failure is the default path for a large company given a long enough timeframe.

Most companies that make the Fortune 500 drop off of it. And the lifespan of a F500 company has gotten shorter and shorter over the decades (<http://www.wired.com/wiredscienc...>).



Think of the following names: US Steel, Pan Am, ITT, GM, Packard, Wang, Enron, Woolworth, Novell, soon Nokia and RIM. These were some of the largest and/or most innovative companies in the world in their day, and today they have either failed, gone through near-death experiences, or are a shadow of their former selves.

I would also argue that Apple is in an especially volatile industry. Even a year from now its major projects will be obsolete, so Apple has to constantly innovate to make sure the next generation is delivered by them, not someone else.

However, Apple is so huge, has so much cash, and has such a huge brand, that it would take several decades to shrink. Its cash hoard alone would be enough to acquire many high-growth businesses, which would give it years of runway.

So in 10 years, not a chance. In 25? Likely.

How did Warren Buffett build the very initial wealth that enabled him to acquire Berkshire Hathaway?

Warren Buffett's wealth to acquire Berkshire Hathaway in 1965 was created primarily from his investment partnerships, the first of which was Buffett Associates, Ltd., established out of his bedroom in May 1, 1956, at the age of 25. These investment partnerships eventually fell under the umbrella of Buffett Partnership, Ltd., which was the entity that bought a controlling stake in Berkshire Hathaway in 1965.

He already had a partnership with his father before 1956, but Buffett Associates, Ltd., was the first partnership in which he was solely responsible for managing a significant amount of other people's money with investors agreeing to pay a fee for strong investment performance. It started with \$105,000 with the following seven limited partners:

William Thompson ("Doc Thompson"), father-in-law: \$25,000Doris Wood, sister: \$5,000Truman Wood, brother-in-law: \$5,000Alice Buffett, aunt: \$35,000Chuck Peterson, friend, & college roommate: \$5,000Elizabeth Peterson, Chuck's mother: \$25,000Dan Monen, childhood friend & lawyer: \$5,000Warren Buffett put in \$100 and was General Partner. He would re-invest his earned fees over the years, such that his portion of the funds managed came to constitute almost all of his and his wife's net worth. Part of the reason for only inviting people that trusted him in his initial investment partnership was because Buffett couldn't tolerate criticism about his stock picks from his investors.

If you wanted to chat with Buffett in the early years, an investment partner is quoted by the *Omaha World-Herald* in 1986 saying, "You went in the back door of his home, walked through the kitchen, the living room and went up the stairs to the bedroom. If you were impressed with show and image, Warren was not your man."



Buffett's house shown above served as the initial headquarters for his investment partnership. It was located at 5202 Underwood Avenue, Omaha, Nebraska. He was renting the home for \$175 per month. Before starting the partnership, he had a net worth of \$127,000 to \$174,000 and had a budget for his family to live on \$12,000 per year. Much of this net worth was from his stint at Graham-Newman, an investment partnership after which Buffett's investment partnership was modeled. This was the New York firm of Benjamin Graham, Buffett's former professor at Columbia and mentor. Buffett left after Benjamin Graham decided to retire. He turned down the opportunity to become a partner at what would have been Buffett-Newman, as he had only gone there in the first place to work for Benjamin Graham. With Graham gone, Buffett returned to Omaha.

What are the best examples of growing pains that Google is now facing as it grows into a 100K+ employee company that are the same problems Microsoft faced 25 years ago?

I Joined Google after years at Microsoft, left a year later for a startup (Box, which is now no longer a startup :)). The Answer is very simple: performance review system. The engineering culture suffers when a developer's compensation depends very little on the quality of a product and a LOT on how he/she performs compared to peers. Developers are much less likely to collaborate, more likely to compete, use meetings/email to intimidate and demonstrate their superiority, even claim credit for others' ideas in a subtle way.

When joining a startup pre IPO, the difference is observed right away: developers are happy to sit down and work with you, the discussions and meetings take place in a constructive manner, in a language everyone in a room can process, and the only goal is to solve a problem. Nobody is afraid to excitedly share their ideas without being afraid of it being "claimed". People are genuinely happy when their peers succeed. If they see someone's idea will benefit the project more, they gladly toss their own idea in favor of the new one. It's making a great product on time that's important. The entire atmosphere is happier, you are surrounded by bright well wishers who want to contribute to your success, as it brings them money and also makes their job easier and the company more successful.

It's amazing, the similarity of mistakes companies make as they grow bigger! For example, most start confusing visibility with impact. A huge boost at performance time (employee performance, not to be confused with product performance) is extreme visibility, usually at the expense of useful work, which is not recognized as much. This leads to developers wanting to work on the coolest product, offer potentially useless visible ideas at the expense of doing relatively tedious, hardly visible work on bread and butter products, including improving quality and adding useful features to projects that actually make money! People who talk more than they code are promoted and encouraged.

In general, as the company grows older, life inside becomes more about climbing up the corporate ladder. And that's when the culture becomes more boring and tense, forcing even developers who don't like to compete and show visibility to do so. Boring people focused on career growth usually don't produce timely, innovative products that can be monetized well. Neither do they do a good job supporting and improving

existing products or growing and enabling their peers and more junior developers. This might be inevitable really, as the company grows large. :(

Box for example, is still great, the best I have seen, but I predict that unless a lot of conscious effort is put into prevention, eventually the culture might start changing as compensation will start depending less on the quality of a product and more on "visibility" or demonstrating you are better than peers. (I am not exaggerating, at Google my manager repeatedly pointed out other team members who were doing something better so I could learn from them. Not very good for building a collaborative environment!)

Of course things can be different in different teams/divisions within the company, and I might be generalizing. BUT! I have 20+ years of experience being a developer, and I am proud to say I can "smell" the atmosphere walking the hallways, eating at the cafe, attending the meetings, etc.

Please everyone: Stay young no matter what your age is! Look back at your youth, FEEL how the most fun you ever had and the most productive and innovative you ever were is when you and your brilliant peers had ONE goal and that goal was not to demonstrate at the review you were better than each other! When you could admire each other and share ideas spending hours near whiteboards, screaming, excited! I know for a fact that this really doesn't have to disappear with age, but companies age too, and some not very gracefully. I hope we can preserve our engineering culture at Box for as long as we can.

What is the secret to Apples success?

What are the most significant lost inventions?

Ancient Inca stone joinery. It is still not known exactly how they achieved the close fit of their masonry.Â



Some Conquistadors reported that they had been told a plant of some sort was known to the ancients that could soften stone, but this is not taken seriously. (One reportedly claimed to have walked through some kind of plants that melted the spurs off his boots - again not taken seriously.)

(Calle Hatunrumiyoc, Cuzco. Image from David Pratt's website at <http://davidpratt.info/andes2.htm>)

Are Brazilians and Portuguese people able to understand Portuguese language spoken in other countries?

Yes. Although sometimes the accent (specially in Africa) is so strong it resembles a dialect. But with some effort portuguese-speaking people can all understand each other pretty well.

If man really landed on the moon then where are the stars?

Photos of stars require long exposure times, long enough that the camera must be mounted on a motorized tripod to track the stars as the earth turns.Â So minutes.Â This would be the same on the moon.Â

Since there is no motion blur on the astronaut, the shutter time for this photo is probably less than 1/60 of a second.Â With insufficient light to expose the film, the sky would appear black, as above.

So if there *were* stars in this photo, that would be proof that someone doctored it.

Why does Google fail at social media?



It goes beyond not just having a social DNA.

I wrote a whole post about some of the influences keeping them out of social titled "why Google can't build Instagram." <http://scobleizer.com/2010/11/12...>

But to reiterate, there are many things holding Google back.

1. **They struggle to innovate on UI.** Lots of designers have left Google complaining that they couldn't get anything done because of the "it must be measured before we make a change" culture.
2. **The founders are not very social people.** I had conversations with Sergey and Larry before they went IPO and it was tough to get them to talk. I had lunch with Larry afterward and noticed his wife was far easier to talk with than he was. Even the CEO, Eric Schmidt, isn't exactly the warmest socialite in the room. Compare him to Marc Benioff, for instance, and I know who I'd choose to invite to my table for a beer.
3. **Their infrastructure was built for a different problem** (displaying non-dynamic results pages of web links) and they are struggling to rework that infrastructure to do things more like what Quora does.
4. **They don't understand how to build community.** They never have had to build a community from scratch, so there isn't the skill to nurture a small group of people along until it gets big (compare to the skill Instagram's founders displayed).
5. **They didn't take it seriously enough when it was small.** They could have more effectively competed with Facebook five years ago, but they didn't take the social side of life seriously. For a whole lot of reasons. For one, their engineering culture is biased toward algorithms, not humans.
6. **They are not facing an incompetent competitor.** With search they faced competitors who, really, had already given up on improving search and were, basically, incompetent. Not true with social. Here there were a group of very competent and innovating competitors.

What features would make Quora better?

If you could export all the questions you upvoted until now to something like a book in PDF, so you could print it and put in your personal library, or send to some friend.

How is YIFY Torrents YTS re able to add movies with such great quality?

First of all, (aka YIFY Torrents) is illegal & is banned in some countries(mostly European).

YIFY always adds movie in ***high quality 720p or/and 1080p***. They wait for the *original blu-ray source* to come out & then *encode that source into smaller sizes*.

I think the person who asked the question wanted to know about the encoding technique not how torrent sites work.

According to a thread I read on here goes the science behind great quality in lesser size.

- The original movie sources are usually shot in **16:9** aspect ratio making the pixel ratio **1280x720 or 1920x1080**.
- Now though the source may be in 16:9 ratio but the *scene of movie is usually in 2:21:1* ratio which leaves two **black stripes** over & below the scene. Like this,



- So, the *black stripes* are nothing but a lot of black pixels in whole frame. Which occupies a large amount of space overall.

- So what encoders do is that they *crop the video to the exact size of scene*, the only part that matters. So if you were to take a screen shot of the encoded version you wouldn't get black stripes, so a notable amount of space is saved because whole lot of Black pixels are removed. Like this,

Why did I lose money on the stock market?

Let's say you plant a seed in the hopes of selling a fruit. It is possible that the seed might sprout. Or it might die before it even sprouts. If it does sprout it could grow to become a plant. Or it could die without sufficient nutrients and/or environmental conditions. If it does grow, it might bear fruit. Or it might not. If it does bear fruit, it might be healthy and juicy or it might not. If the fruit sure turns out to be a great one, it might end up on the market. Or it might rot on its way.

See, even a simple act of planting something to create a fruit is fraught with dozens of risks. There is no certainty that the farmer would be able to get the fruit at a cost you could afford. What about complex companies that do things that have never been done and things that are friggin new? Will they have risks? Of course, they do. Does that mean they could lose their investor money in pursuing growth & returns? Of course.

In short, even the most well intended projects can fail. And so would all the investments made on them. That is stocks for you. If the ideas you bet on win, you win. If they lose, you lose. When you invest in something, you bear all those risks by becoming a co-owner of the company.

Now, there are ways to reduce the risk. The first thing is to diversify appropriately. Instead of betting on one idea or one CEO or one brand, invest in a couple of different companies. Or even better, learn what an ETF is and invest in a whole industry you are comfortable with. And the next step is to use your grey-matter. Instead of mindlessly betting based on what your hair-dresser (or a financial advisor) tells you, do your own research to understand the company/sector/economy. That takes a lot of time. That might mean, instead of day trading, you might be investing in only a couple of new companies each year and then stick with your best horses.

The third point is to give your investments adequate time. You don't plant a seed today and expect a fruit tomorrow. Even the best of plants take time. In general, when you invest in the stock markets, plan to invest money that you would not need in the next 10 years.

How long can humans live in space and what is the worst case scenario for someone who lives too long in space?

We don't know the answer to that.Â But every crew that resides on the International Space Station provides us information that we use to adjust our protocols and that

extends that period of time.

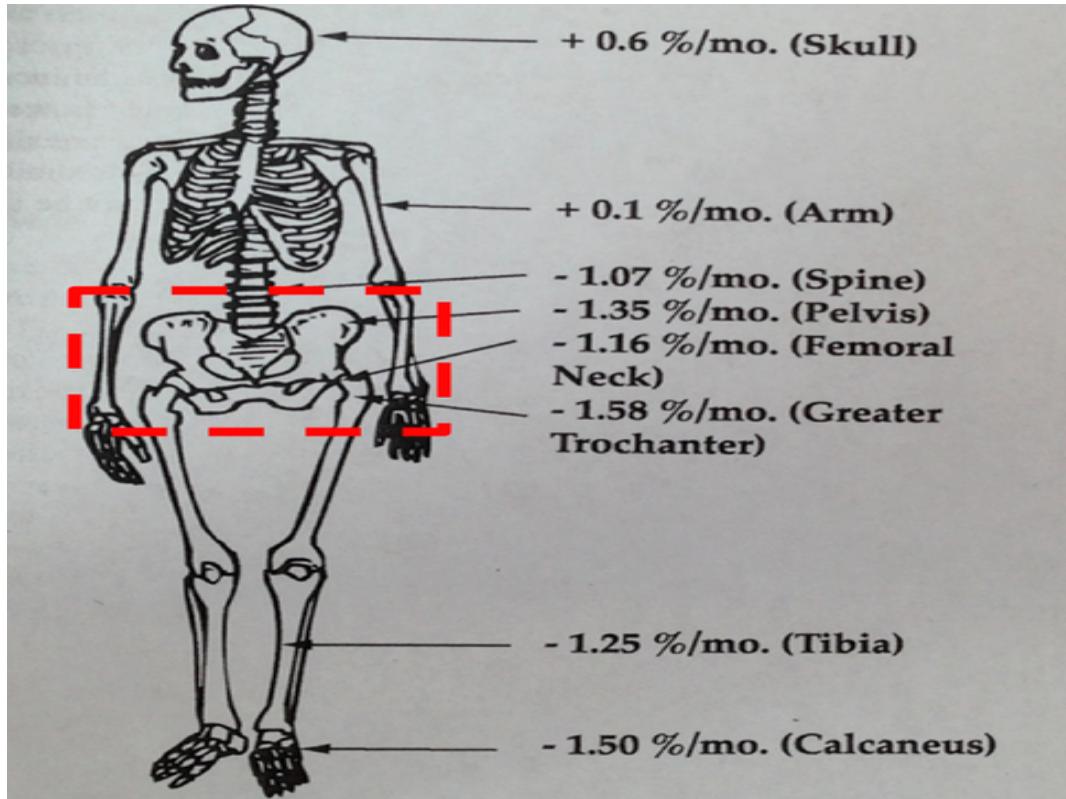
The longest contiguous amount of time a human has spent in space is 437 days.Â That was done by Valeri Polyakov, almost twenty years ago.Â That was his second flight.Â His first was 240 days long.Â Sergei Krikalev, over six flights, has spent 803 days in space.

Space is a harsh environment for humans.Â We didn't evolve to live there.Â Systems throughout our body have evolved to function under the stresses of gravity.

Our muscles are constantly working against gravity, on Earth, and those muscles have less work to do in space, and so they atrophy.Â That includes the heart, which shrinks a little, the neck muscles that hold up our heads, and our calves.

Since our bones are not experiencing the loads they experience on the ground, they feel no need to maintain themselves.Â Bone tissue is absorbed and not rebuilt.Â This absorbed bone can cause kidney stones.Â The places where the bone has weakened can easily fracture.

Here's a graphic that shows the rate of bone loss for various parts of the body.



Â

There is evidence that extended periods in space can result in dysregulation of the immune system.Â While there isn't too much risk of exposure to pathogens, a compromised immune system can result in autoimmune responses and hypersensitivity.

Aside from the deleterious affects of microgravity, a potentially larger threat is radiation.Â We take for granted how much our planet protects us from radiation.

Out in space, astronauts are exposed to galactic cosmic radiation, solar radiation, solar cosmic particles, and geomagnetically bound radiation.Â This radiation is so prevalent that when astronauts close their eyes, they often "see" bright flashes, as cosmic rays hit their optic nerves.

Radiation exposure can result in cell death or can cause mutations that result in cancers or epigenetic effects.Â Some systems are quite sensitive to radiation and their functions can become impaired, such as the immune system and the bone marrow system and the eyes, resulting in cataracts.Â We do our best to provide shielding, but paradoxically, shielding can result in more exposure by what is called

secondary radiation.Â When an energetic particle hits the shielding material it can emit gamma rays and energetic neutrons.Â NASA takes astronaut radiation exposure very seriously.Â We monitor the exposure of each crew member and maintain a career tally.Â When they hit the allowed threshold, they can be prohibited from flying again.

Can Buddhism help people achieve success Or does it only help people feel peace?

No. Buddhism helps you realize that there is no success. Success implies winning and losing, which are a duality. Buddhism teaches us that there are no dualities, all of them are illusion created by the self.

When we begin to empty out the ego and seek the stillness of mind, we can see that not only is there no winning, there is nothing to win, since all things are one.

The White House was built in 1792 and humans have grown in height in the past 200 years Is there anything in the White House such as doors that are no longer to scale?

George Washington was 6'2" (1.88 m).Â Thomas Jefferson was 6'2.5" (1.89 m).Â James Monroe was 6'0" (1.83 m).

The average height has increased over the last two hundred years because childhood nutrition has improved over the last two hundred years.Â Our species has not evolved to be taller.Â If they were well fed during childhood, people could grow as tall two hundred years ago as they do today - as presidents 1, 3, and 5 represent.

Now, that said, from 1948-1950 the White House was gutted and refurbished.Â Every interior wall, floor and ceiling was removed and rebuilt.Â Although the refurbished layout followed the original White House plans, some modernization was done.



Why did I lose money on the stock market?

Because you purchased partial ownership of a company, in the form of shares, paying a specific amount of money for each share. Since the time you bought them, the value of each share has dropped below the price you paid, so the value of your holdings is worth less than your original investment.

The price you paid was, at the time you paid it, the "market price" for a share of that company. The market price is defined as the price at which an informed buyer (that's you), and an informed seller (that's the person your broker bought the shares from) agree to consummate a transaction. If you multiply the price per share by the total number of shares outstanding (both of which are available for every public company), the result is the Market Capitalization of the company—what the 'market' thinks that the whole company is worth at a specific moment in time, taking into account everything that can be known or guessed about the company.

In the time since you purchased your shares, things have changed in the market (which is always changing, of course.) The company might have had trouble

executing on its plans, or perhaps a new competitor entered the market with a better, cheaper product, or perhaps global economic forces do not bode well for the company's future.

As a result, the 'market' today thinks that the company as a whole is worth less than it was when you made your initial purchase. Therefore, the tiny piece of the company that you own (in the form of the shares you purchased) is correspondingly worth less, which means that if you were to sell your shares today, you would get less back than you had originally invested...and hence you would have "lost money on the stock market".



Is Carl Icahn who recently upped his Apple valuation to 216 per share accurate?

There are some strong arguments for a valuation of over \$1 trillion. When you take Apple's market value and subtract their cash and short term investments, then take their earnings and project a reasonable growth, a \$1 trillion value is actually fairly

reasonable. When you compare it to companies like Google and Microsoft by those same metrics, they're much cheaper than those companies based on earnings and projected earnings. When they are compared to companies like Amazon and other companies that are huge but barely make any money, Apple is either ridiculously cheap or those other companies are wildly overpriced (those two aren't mutually exclusive either). That's not even comparing to startups with absolutely no revenue that have monster valuations. I'm not saying those companies aren't worth money, but we have companies that are years away from having any revenue with valuations of billions of dollars. So if we're going on comparisons to other companies or on projected earnings, the idea that Apple is worth \$1 trillion dollars is not that much of a stretch, even at its current size. And keep in mind that Apple is projected to have great growth in the next couple of years, both in their current product lines and new products, all while maintaining or growing margins. This is basically unheard of but they somehow manage it. Whether Wall Street is going to actually give Apple the value it deserves remains to be seen. While Apple tends to break the rules by somehow growing like crazy against all projections, Wall Street also seems to judge it by a different set of rules, punishing it for the slightest thing and not rewarding it for its great results. We'll see.

tl;dr Yes it's worth \$1 trillion but whether it will actually reach the price it deserves is still up in the air.

Why is there only trigonometry why isn't there quadonometry pentanometry hexanometry etc?

Short glib smarty-pants answer: because quadrilaterals, pentagons and hexagons can all be divided into triangles.

What secret sides to human nature do therapists see that non therapists would be surprised by?

I'll give you my favorite one: People CREATE precisely what they try hardest to avoid.

Germophobes put paper on public toilet seats and let it fall on the floor when they're

finished because they don't dare touch it. They don't flush because they refuse to touch the flush handle. So when you walk into a public restroom with toilet paper all over the floor and a toilet full of wretched feces you blame the low-class slobs but it's actually the neat freaks who make the mess!

People who are afraid of being treated unfairly will unintentionally treat others unfairly in an attempt to ensure that no one is taking advantage of them.

It's a fascinating phenomenon which I have seen in hundreds of people for decades.

Can we or do we send up any spaceships that are nuclear powered like a submarine?

There are a couple of concepts about power and propulsion being confused, here.

In a submarine, a nuclear reactor uses fission to generate substantial heat that is used to produce steam that turns turbines to both generate electricity and turn the main propeller.Â Because a submarine is in water, it can be propelled forwards or backwards just by mechanical energy of turning the propeller.

In a spacecraft, nuclear energy can be used to generate electricity.Â We've done so on many small unmanned spacecraft, such as *Voyager*, *Galileo*, and *Cassini*.Â On those vehicles we use a radioisotope thermoelectric generator (RTG).Â Plutonium 238 decay releases smaller amounts of heat and we use a thermocouple to convert some of that heat energy into electrical energy.Â But while that electrical energy is useful to power the radio, the computer, and the science instruments, it is useless in propelling the spacecraft.Â In the vacuum of space, one can't move forward simply by pushing backwards, because there is nothing to push.Â With current and near future technology, in order to move a spacecraft forwards we need to expel mass.Â Conservation of momentum means if we shoot a small amount of mass at very high speed out of the back of the spacecraft, the much larger spacecraft mass will move forward slightly faster than it was.

The potential role for nuclear energy, here, is to provide electricity that can be used to

accelerate that outgoing fuel so that less fuel needs to be used (ion engines).Â But that requires very powerful and thus massive reactors, outweighing the benefits (today).Â So, nuclear energy just isn't a panacea for spacecraft propulsion.

Even if it were, there are complications that make it undesirable.Â One is environmental risk.Â NASA does use plutonium RTGs because they are small and can be encapsulated to ensure that even if the launch vehicle explodes during ascent, the capsule will remain intact and not release radioactive material into the environment.Â Even though the engineers are confident there is no risk, every time we launch one there are protests, and court injunctions, and lawsuits from environmental groups.Â Even though uranium reactors could provide more electrical energy than plutonium RTGs, NASA does not use uranium reactors because they aren't as easy to secure as a plutonium RTG.Â I can't imagine NASA ever getting approval for uranium reactors.Â The Soviet Union, however, did not have to worry about such things as protests from citizens and the legal process. They did in fact launch uranium reactors into space (with mixed results).Â In 1978, one of those uranium powered satellites re-entered the atmosphere and released uranium over Canada.Â The Canadians were not pleased.

Do Microsoft employees use Google at the office?

My friends at Bing & Microsoft do.

There is no shame in using Google even if they are Bing engineers. Atleast they have the guts to compete with Google. Not to forget that it is Bing's existence that keeps Google engineers on toes and pushes them to keep innovating.

Not to forget most Googlers use Facebook daily.

How long can a human survive in a microwave?

Horrifically, there is data on this. In 2012 a woman put her baby in a microwave for what was estimated to be two minutes. I don't know how the estimate was reached. The baby died, having suffered 1st through fourth degree burns in different parts of

the body, including burns of her internal organs. Three other cases of parents microwaving their children exist. One baby survived, though with severe burns to her body, in 2008 after being microwaved for 10-20 seconds. In summary, a baby will die in under two minutes but more than 20 seconds. For a full grown adult I suspect it would take at least two minutes, and the pain would be excruciating. May there be adult-sized microwaves in hell for these parents.

What was it like to deliver a presentation to Steve Jobs?

I worked at Apple, and had to present to Steve every now and then.

The first time we met, he walked into the room, looked around, realized that I was new, walked up to me and asked (all in one breath), "Are you smart? Do you know what you are talking about? Are you going to waste my time?"

Instead of responding right away, I decided to consider what if anything I was going to say. But since I did not respond right away, Steve said, "Good, let's get started." I wonder how that meeting would have gone if I had tried to say something instead...

I presented new technology to him a number of times. Sometimes it was my ideas, and sometimes it was the work my team did (My team always did exceptional work. The people that reported to me were outstanding, and it was an honor to manage them.).

We were in a meeting one time, and Steve commented on how much he hated the 'wart' that was the external iSight camera. I said, "I can make it internal." Steve asked how long it would take to have a prototype ready. My team worked on it (with many other teams both software and hardware), and we developed a prototype. We had the demo set up and ready to go for the next day. The only 'glitch' we had not anticipated was one of the software guys upgraded the OS on the machine AFTER we had run through the demo and felt it was ready. So the next day when we showed it to Steve, there was a color shift in the video we had not seen the day before. He asked why, and the software engineer spoke up and said he had updated the OS and it probably

changed the gamma settings. Steve I think was more amused, and just said, "Get things right, and show it to me again."

Another time, I was presenting a feature for Motion I came up with. Real-time, green-screen, high-definition chroma-keying in software. Steve asked me in the presentation if another company could come up with this feature. I said, "Well, since I thought of it, I imagine someone else could come up with the idea, but it is rather unlikely that they could solve it the same way I did." (By the way, the 'peanut gallery' of VPs and Directors standing behind Steve tried to tell me how to answer Steve's question. The problem was, half of them were nodding yes, and the other half were shaking their heads no.) Steve decided that since it was hard to duplicate, that instead of going for a patent on it, we were going to keep it a trade secret. And as far as I know, no one has been able to duplicate the real-time, green-screen, high-definition chroma-keying feature in software... (the key being real-time).

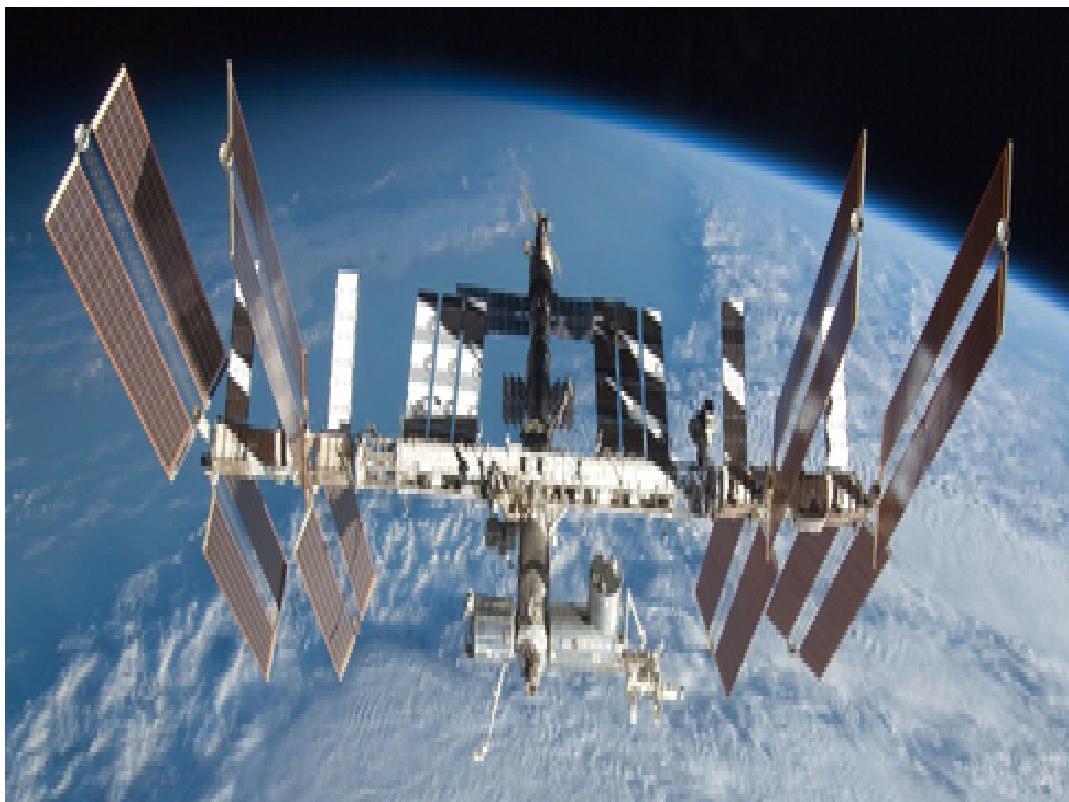
Over the years, I (and members of my team) did dozens of presentations for Steve. My team was responsible for products like the Mac Mini, Apple TV, and creating many product prototypes...

Steve was wicked smart. I was always amazed at how sharp he was and how quickly he could focus on what was important. I don't know ANYONE that even comes close to how good he was at being able to do that.

Most of my presentations were to Jony Ive. Jony is a wonderful person to work with. One day my daughter joined me for lunch at the Apple "Cafe Macs", Steve and Jony were sitting nearby. My daughter was going to school for design illustration and asked if she could say hi to Jony. I took her over and expected just to say hi, and leave. But Jony was charming and chatted with my daughter for about 45 minutes. I was noticing that Steve was growing more and more impatient, but also since they were talking about what made a good design, I think Steve was being more tolerant. Finally, Steve suggested to Jony that they had to get going, and Jony wrapped up his discussion with my daughter. She was floating out of the cafe. Jony is a really nice and thoughtful person. And I really appreciated him taking that time to really talk with my daughter.

Why does the ISS have such a weird shape?

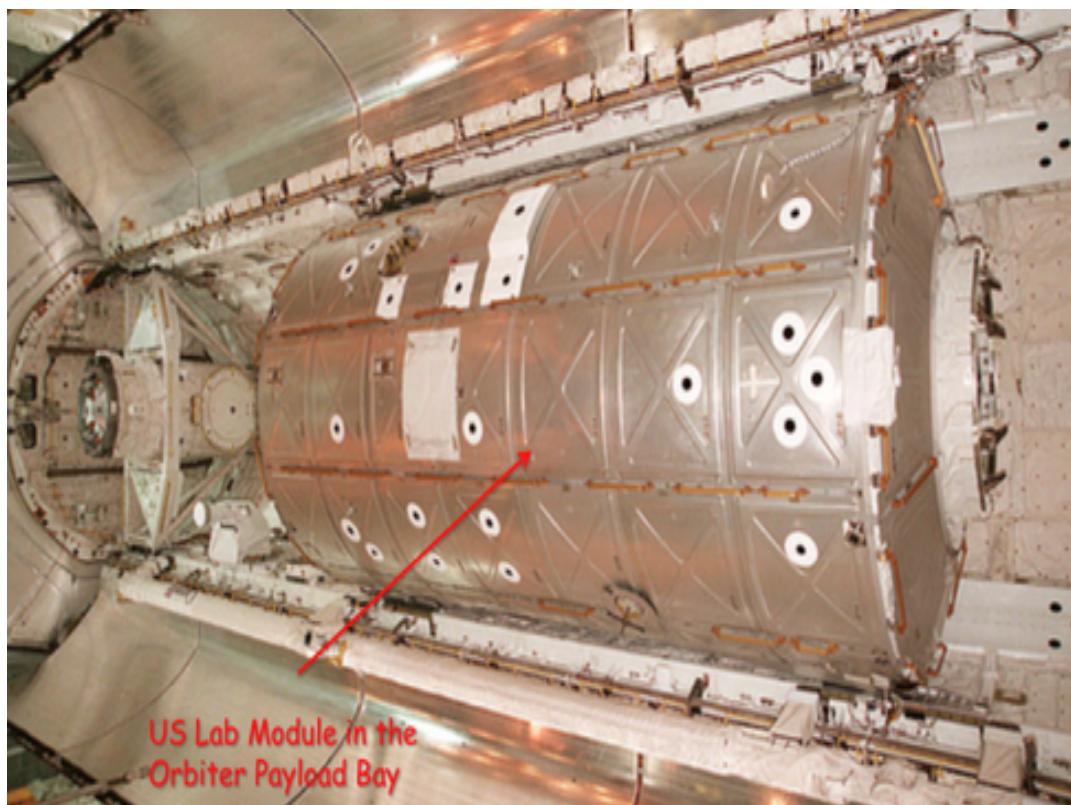
Aww, I feel like a parent that was just told their child is ugly.



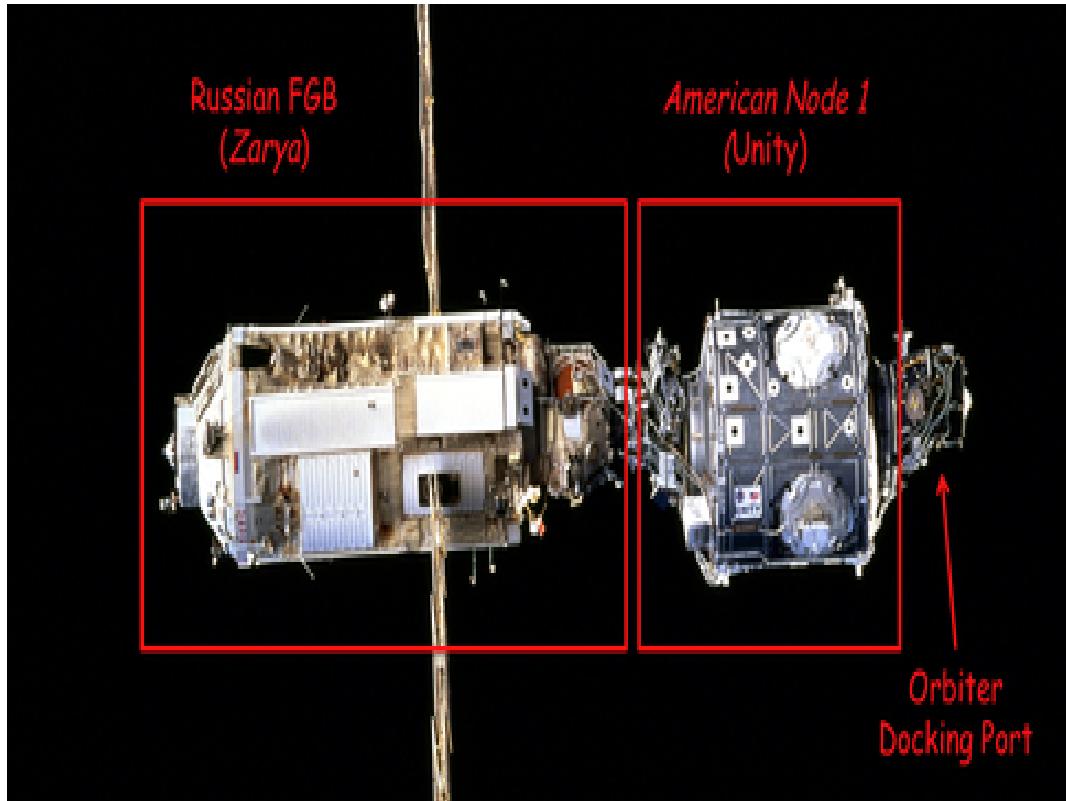
As an engineer, I look at the ISS and think “*of course it looks that way, why would it look different?*” Where a fictional spacecraft has the luxury of having its design dictated by style, real spacecraft are constrained by budget, tradeoffs, and practicality. Every feature of the ISS can be explained by those words.

We don't yet have the technology to do construction in space, so we have to assemble a large vehicle in space from launch-able components. At the time of the ISS assembly, the two mechanisms for getting a large payload to space were the Space Shuttle Orbiter and the Russian Proton rocket. Those two sentences explain a lot of the ISS appearance. It had to be assembled from pieces that would fit in the Orbiter payload bay or the payload fairing of a Proton rocket. This dictates a maximum length and diameter for each component. We can therefore expect ISS to

be composed largely of cylinders, linked together like sausages.

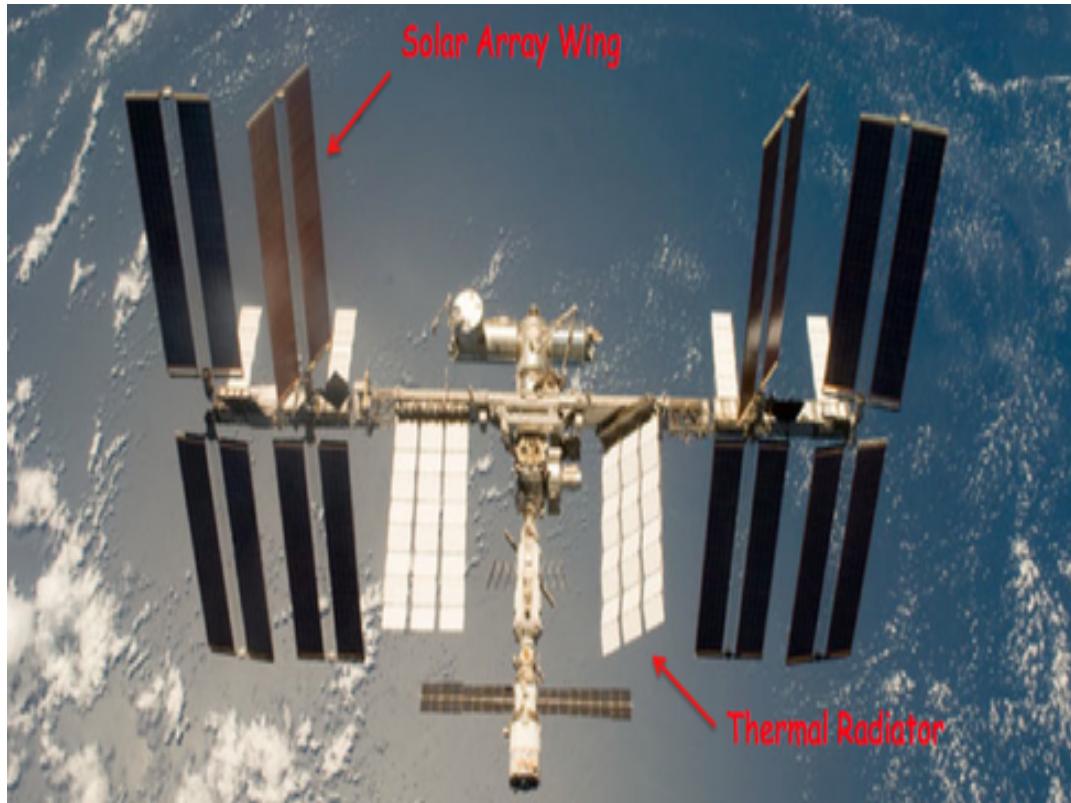


Those two delivery vehicles dictate other characteristics. The Space Shuttle Orbiter could deliver a completely unpowered cylinder, remove it from the payload bay and attach it using the robotic arm and attach it to the ISS. But, the Russian Proton rocket deposits its payload in low Earth orbit and that payload then has to fly itself to the ISS. That means each of the Russian modules are self contained spacecraft. They have to have thrusters and fuel tanks and navigation and communication sensors and antennae. When we look at the Russian modules we see that equipment.

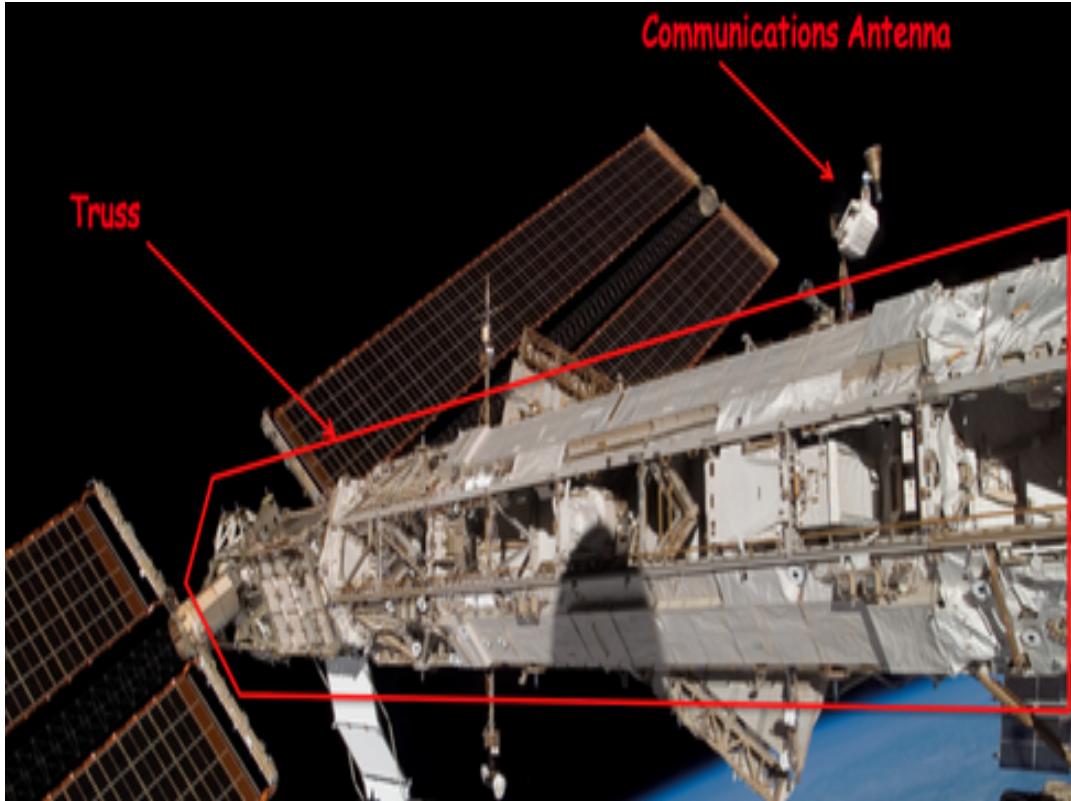


A space station with multiple labs operating at all times needs a lot of electrical power (a few kilowatts). That's going to require big solar arrays - enough to almost fill a football field. And because the angle to the sun changes as the vehicle orbits the Earth, those solar arrays need to be able to rotate so that they constantly face the sun. That dictates that those solar arrays need to have unobstructed paths - unobstructed not just in their rotation, but unobstructed in their line of sight to the sun. That dictates that we mount the solar arrays off to the sides and that we keep the profile of the rest of the vehicle low.

Similarly, we need to be able to reject heat to space and thus need to have large radiators. Those radiators need to be able to articulate so that they aren't in direct sunlight.

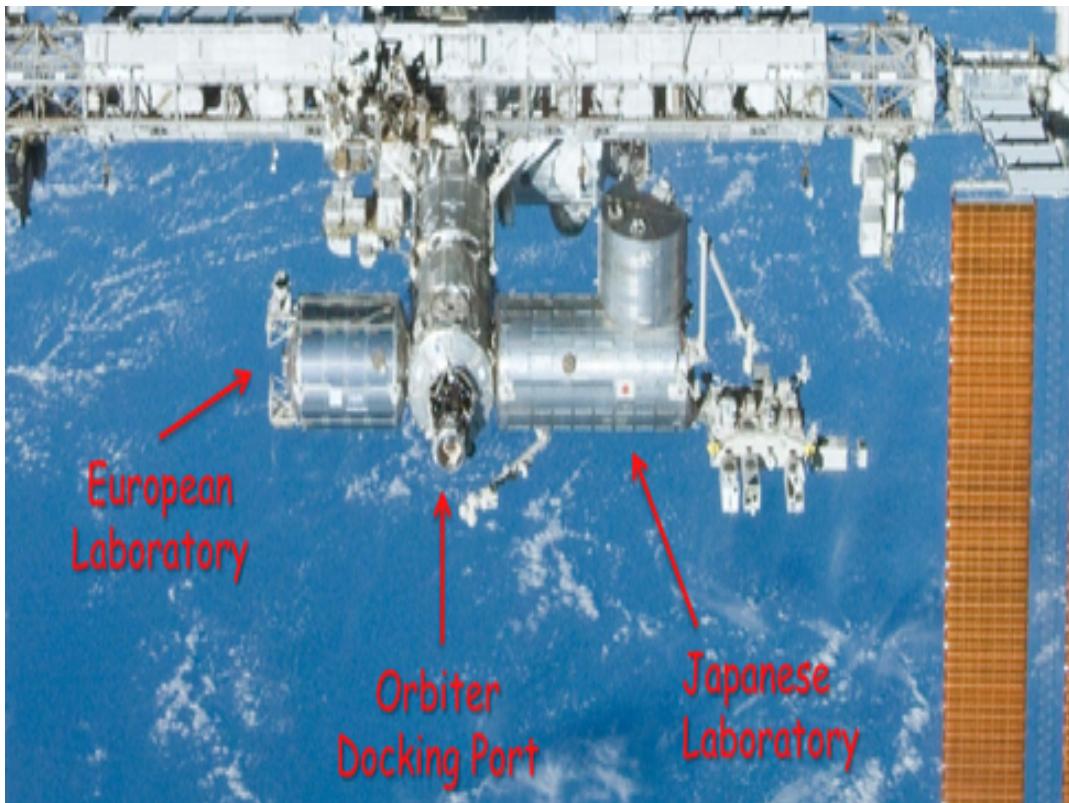


To hold those solar arrays we need rigid structures that can handle the twisting torques of the solar array rotation and drag.Â That's the big horizontal bar across the vehicle.Â The trusses are not pressurized modules, but they aren't wasted space.Â Those trusses are full of equipment like batteries and coolant pumps.Â The ISS needs to stay powered during night passes, so several very large batteries are needed.



Now that we've accepted that our space station is going to be a series of linked cylinders, we might wonder how they would be arranged. It took several years to assemble the ISS. It needed to be a functioning and occupied vehicle during that time. That puts restrictions on where components are put. We need to have stable attitude control of the stack and we need to have power, data, and consumables connectivity. We need to have unobstructed paths for docking vehicles along the v-bar (velocity vector) and r-bar (orbital radius vector). We need to be able to reach all of the berthing ports with the robotic arm. We can't block communications antennae. The GPS antennae need a clear path to the satellites.

For example, one might wonder why the European *Columbus* module and the Japanese *Kibo* modules stick out to the side instead of being added to the front. The reason is that they were delivered by the Space Shuttle Orbiter and the Orbiter needed to dock to the PMA (Pressurized Mating Adaptor) that is at the front of the ISS.



The ISS is all about function over form. When I watch science fiction, I find myself looking at the smooth, uniform, symmetrical ships and asking myself questions like "How do they reject heat? Where are they getting their electrical power? Where are the communications antennae? How does a docking vehicle avoid pluming? Why did they put the tanks on the inside where they are harder to replace? Why are they using so much more material than needed? Where the heck did they build that thing? And so on." But every little projection, every little change in color, every change in dimension on the ISS is for a explicit engineering reason.

Here's an animation showing how it was all put together:

[youtube_url](#)

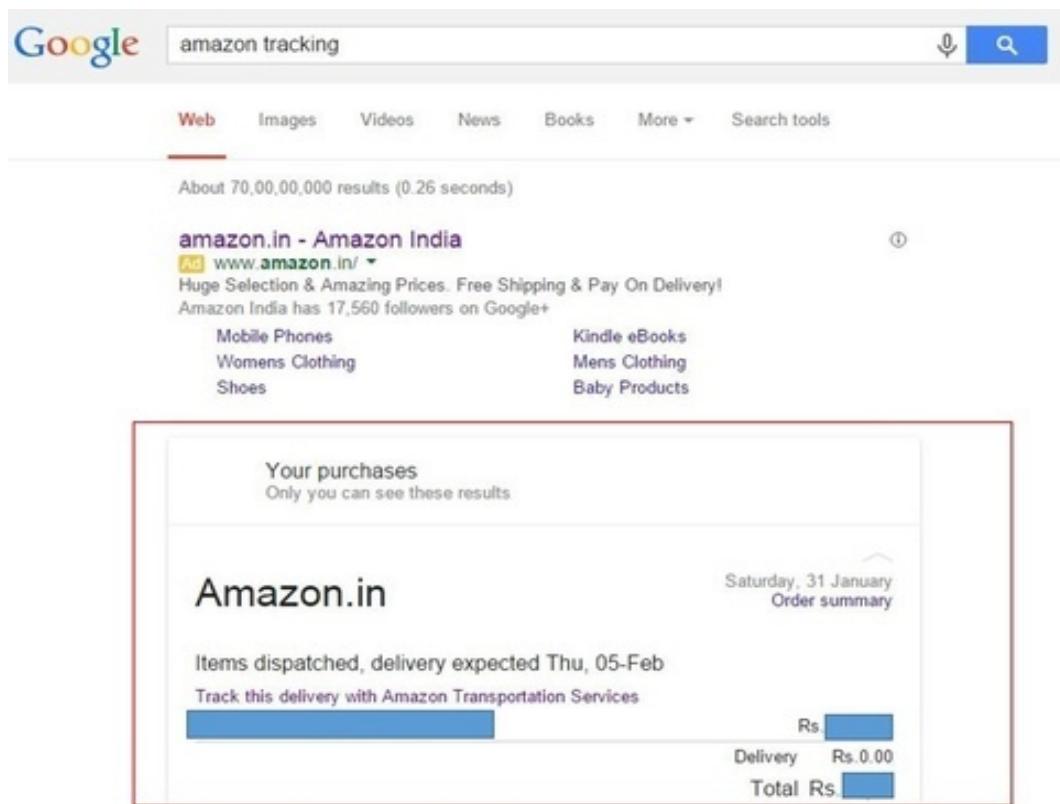
Does NASA own 747s?

What are some mind blowing facts about Google?

Prerequisites for this trick to work:

You should have placed an order at amazon that is not yet delivered
You should be logged in your amazon account through google
Simply type 'amazon tracking' into Google and press enter.

This is what happens then:



What kind of crop consumes the most water?

Besides others mentioned here, **cotton** is a huge consumer of water. Because cotton demand is increasing, it also causes more and more water to be diverted to agriculture.

"Although only 2.4% of the world's cropland is planted with cotton, it accounts for 24% of the world's insecticide market and 11% of sale of global pesticides. **73% of global cotton harvest comes from areas under irrigation.**"[1]

[1] Thirsty crops cause water shortages and pollution

If we are taught in elementary school that water is odorless how do animals know where to find water?

Because, once again, the Common "Wisdom" is just dead wrong.

Water is only odorless if you live in a place where there's lots of it all over the place.

When you've lived in a place, like the high deserts of Central Oregon, where it's here, but intermittantly, you absolutely can smell it, clearly, whether from a rainstorm or a ground seep.

Also, contrary to what schools teach, water **has a particular taste** which is affected by the concentrations of various minerals and chemicals in it, or the lack thereof.

Doubt me? Good!

Here's an experiment for you.

In the morning, fill a clean glass or ceramic cup with tap water.Â Let it stand overnight, uncovered.

The next morning fill a similar glass with fresh tap water.

Taste the one that stood over night. Now taste the fresh one.Â Now taste the other again. Taste the difference?

It's subtle, but that difference is the chlorine, and flouride added by the water company has gassed off overnight, changing it's composition.

Now taste some distilled water.

It's different from the other two, isn't it?

That's because there's no minerals or salts at all in the distilled water.

To me distilled water tastes "dead" or "flat" because our bodies need those minerals.

What are some of the costliest mistakes ever made in history?

One of the costliest and most un-necessary mistakes in history was America's involvement in the Iraq war of 2003. It cost something like 4 trillion dollars, 4500 American dead, with another 50,000 wounded, 600,000 Iraqi dead including 2000 children under the age of 10. Fully 40 percent of all American military equipment was involved, which will take decades to fully replace. It resulted in the collapse of American prestige and the facade of omnipotence where, as Brent Scowcroft succinctly put it, "because of the policies of the Bush Administrat

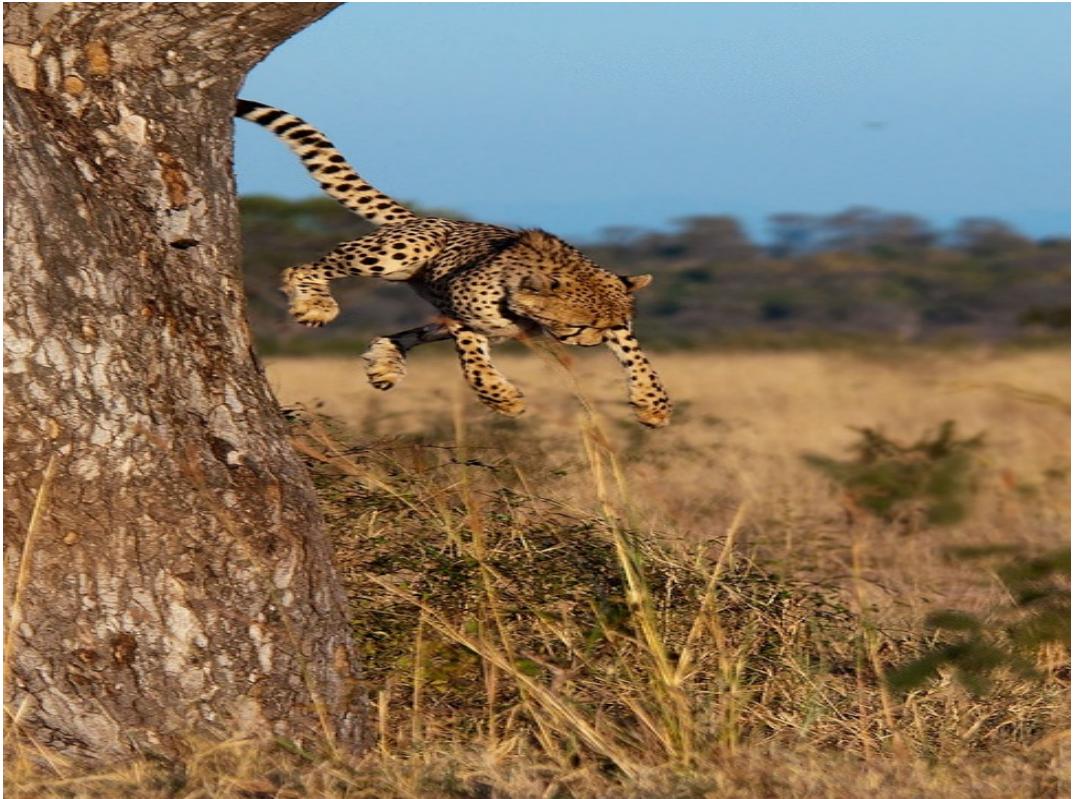
What happens to a cheetah when it trips at full speed?

It is true that when driving at high speeds, crashes can very well be fatal. So it seems logical that a cheetah tripping while sprinting at full speed would carry fatal repercussions. Except for one small detail: a cheetah is no car.



Well, unless it's a Bill Thomas Cheetah sports car, that is.

See, while the cat and the sports car can hit similar speeds, the overall structure of each is drastically different. You must not forget that while a car is made up of mainly plastic and metal, a cheetah is made from flexible flesh and jointed bones. When a car has a collision at high speed, there is very little the body of the car can do to absorb damage from the machine; its main job then is to protect the drivers within. A cheetah, on the other hand, can flex and bend, absorbing the force of the collision against the ground.



Oi.

But I know what you may be thinking right about now. "Are you saying that me jumping out of a car going 110 km/h is better than me running into a brick wall going 110 km/h?" Well, no, it's not better. But that's because the situation is different. For one, you have very little control over your situation from the moment you jump out of the car, whereas the cheetah only loses control the second it trips. But that doesn't mean that a human running on all fours at 110 km/h would survive tripping.

While cheetahs and humans are similar in many senses (warm blooded, mammals, etc.), our physiologies are still worlds apart, differences which mean that the cheetah would still fare better than you. One adaptation that would help the cheetah is the fact that it, like all other cats, has shoulder blades that are not attached directly to the rest of the skeleton; their shoulder blades are held on purely by muscle, which means their arms can flex far better than ours can. This is also the case with their clavicle (which explains why your house cat can fit through the pet door despite only being as big as its head.)

It should also be noted that the cheetah's spine is far more flexible than ours. This evolved as an adaptation to help the cheetah achieve greater speed; as the cheetah runs, its spine folds and decompresses in a way similar to an accordion, which maximizes the length of a single stride. It also inadvertently means that if it happens to trip, it fares just a bit better than us if we were in a similar situation.

And remember that tidbit I said earlier about how a cheetah loses control the moment it trips? Well, that isn't exactly true. I am sure you are familiar with the saying "A cat always lands on its feet." Well, there is truth to that. Cats have a complex inner ear structure, one that allows them to sense their position relative to their surroundings without using touch or sight. This is similar to the human ear, and it is all thanks to a special fluid called endolymph, and the receptors that detect the fluid's position relative to our bodies. However, cats have a one-up on humans due to their flexible tails, which allow them to change their position in midair. While a cheetah may not have enough time to do a barrel-roll as it trips, this does mean that the cat can assume a more "favorable" position to hit the ground in.

As a matter of fact, cheetahs hit the ground in a tripping fashion more regularly than you may think. Since they have claws blunted due to using them like cleats, a weak bite force and a sleek but fragile build, cheetahs rely on tripping their prey (by grasping a hind leg) in order to get it onto the ground where the cheetah may have the advantage. This poses an obvious tripping hazard, though, since the cheetah would be chasing the gazelle at 110km/h, they are separated by less than a meter, and suddenly the 60 pound gazelle is knocked to the ground. In a situation as such, the cheetah would be better off running over the antelope as opposed to trying to stop by any other means, as it would simply be the most efficient method.

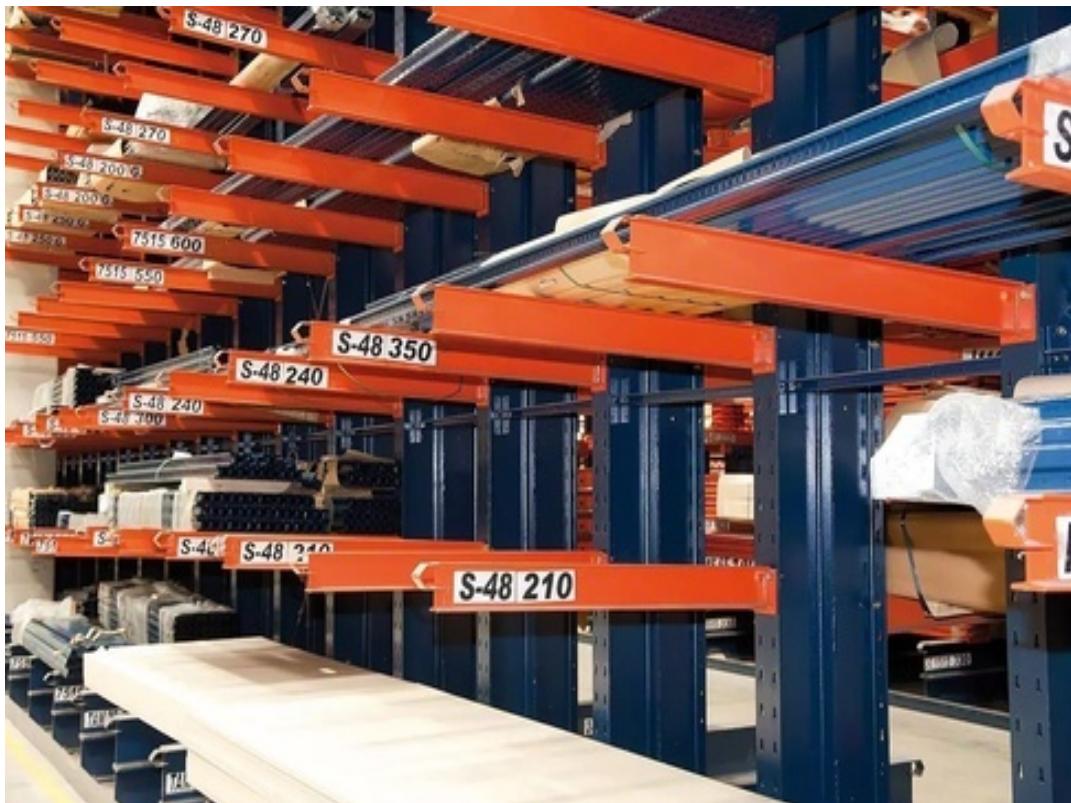
What does cantilever mean in building design?

Cantilever just means that a horizontal beam (or other building element) is unsupported at its end.

Here the deck is a cantilever.



Here is the principle at work in shelves. The orange beams are cantilevers.



And here it is in nature



It has been pointed out that this last one is an overhanging beam. For structural analysis that is correct, but historically the overhanging part was often called a cantilever. To support a true cantilever, the point of connection between the cantilever and the support should resist rotation. In the case above, more weight will just tip the rock.

So, here is a cantilever in nature that meets all the requirements. See the branch heading out to the left? Yes, those people are actually that small in comparison to the Sequoia.



What are the contradictions in Saudi Arabia?

I think the biggest contradiction is that people want to modernize without change. The newest thing is highly desired, but people dislike that they may need to change their behaviors in using that thing or that that thing may force changes on a conservative society.

By definition, conservative societies do not like change.

An example of this can be seen in the entry of camera-enabled cell phones to the Kingdom. Everybody wanted one; it was cutting-edge. After about a year, people realized that if everyone had a camera and if taking a picture could be done subtly, without bulky equipment, then people could take pictures anywhere, of people who did not give permission to have their photos taken. This included pictures of women with their heads and faces (or more) uncovered, in other words, "pornography" and "invasion of privacy" by Saudi standards. As a result, there was a movement, led by conservatives, to ban the import of such cameras.

By the time this started, however, it was too late. There were already hundreds of thousands of such cameras loose in the country. With the horse out of the barn, all that could be done was to write new laws that heavily punished the improper use of the cameras.

Saudi Arabia has seen push-back at the introduction of many new things such as radio, TV, public education, public education for girls, satellite TV, social media, etc. Some of the push-back led to rioting in the streets with fatalities.

Is Google the most powerful company in the world?

In terms of revenue?

[Sinopec Group](#) is the largest company in the world. Google is not in the top 60 list.

In terms of market capitalization?

Apple Inc. is the largest public company in the world. Google is the 4th after [Exxon Mobil](#) and Microsoft respectively.

In terms of profits and losses?

[Fannie Mae](#) is the largest company in the world. Google is not in the top 30 list.

In terms of number of employees?

Walmart is the largest company in the world (2,200,000 employees), Google has 55,030 employees.

In terms of largest information technology companies in revenue?

Samsung Electronics is the largest information technology company in the world. Google is the 10th after Apple Inc., Foxconn, HP, IBM, Microsoft, Amazon.com, Sony and Panasonic respectively.

References :

How could you identify the next Warren Buffett?

The markets have changed so much since Buffett's early investing years. In the 1950s, it was much easier to find mispriced securities. If you read The Snowball (his bio) we learn that he was able to buy stocks trading at 3x free cash flow in the 1950s, which is incredibly cheap. Today it's almost impossible to find such bargains because investors have better information and tools. My guess is no one is capable of growing a fund at 30%+ a year for over 10 years like Buffett in his early years because markets are more efficient in today's Information Age. Buffett was the right guy at the right time in the right environment to make those insane returns.

If a company had solid financials plenty of cash in the bank and little debt what would the compelling reasons be to go public?

To make **acquisitions**. They don't need to raise funds to do this, they can acquire with their stock.

It's easier to acquire companies in stock-only transactions when you are public, as your stock has a liquid market value and is liquid to those that receive it. You can even acquire other public companies, which private companies rarely do.

To provide **liquidity** to employees and investors. Especially if the company is backed by venture capital investors... they need a liquidity event within the lifespan of their fund (typically 10 years).

Why is Teslas market cap so high?

People have high expectations of what Tesla can do in the future. In this case, the high market cap is a measure of peoples hopes and dreams, not of reality. That's not to say that they may be right, but I'm saying that a nuts and bolts investor knows that the best time to sell a stock is when everyone else is buying it without any real reason. And the best time to buy a stock is when everyone else is selling it without any real reason.

How do you find the intrinsic value of a company What are the calculations and the steps one must take?

ThereÂ are many ways to calculate the value of your start-up.Â Unfortunately,Â the only truly valid method would involve an analysis of revenueÂ traction over time and overall profitability of the business model.Â TheÂ least reliable is to base a valuation on tangible assets, I would neverÂ buy a company or recommend a purchase based on something that could beÂ purchased from secondary market sources at a cheaper value; there is noÂ reason to do otherwise.

In conventional formal valuationÂ circumstances, the organization would retain someone to perform a 409(a)Â valuation model that private companies use to substantiate theÂ valuation basis of the company.Â Most public accounting firms canÂ provide this service, in the Bay Area Moss Adams is a good firm toÂ utilize or Armanino and McKenna.

The 409(a) utilizes several data inputs, generally speaking the following would be considered:

- 1.Â Â Â Â Â A five year forecast indicating major assumptions applied to eachÂ element (i.e., revenue growth, headcount addition or RIF, etc).
- 2.Â Â Â Â Â Updated CAP table showing, Common Stock, Preferred, Convertibles, Warrants, etc.
- 3.Â Â Â Â Â A DCF model based on the Net Free Cash Flow Model
- 4.Â Â Â Â Â Black Scholes Value Model (for calculation of call value needed inputs are strike price, risk free rate, etc)

Once the inputs have been determined, the model will provide an estimate of the intrinsic value of the firm.

DCF models are relatively straightforward and can be accomplished by someone who has done the work in prior situations.

UnfortunatelyÂ you don't have time to go through and both learn and perform all thatÂ crap so your best bet is to go with #3.Â A DCF model based on the NetÂ Free Cash Flow Model.

This is a complicated step by step process,Â certainly not found in 'Valuation for Dummies' or 'an Idiot's Guide toÂ Valuation of a Company'.Â This is a sophisticated request, not a 'plug'Â type of problem.Â Developing a five year forecast takes time andÂ involves significant assumption and analysis.Â Choosing the discountÂ factor alone can cause you to cover ground that involves anÂ understanding of statistical models, risk, etc.

As I stated, theÂ most difficult aspect of this analysis is creating an objective model.Â There will be a big difference of opinion depending on which side of theÂ table you sit.Â From the investor's side, you want the traditional 'buyÂ for a little and sell for a lot'.Â From the owner's side there is tooÂ much ownership and separation anxiety from a company that is almostÂ viewed as a child in that the owner raised it, nurtured and watched itÂ grow from nothing to something.

The real tricky part of the strategy is, '...how to get a motivated investor and an entrenched owner to compromise?'

The answer is to first define where the sticking point is, assuming talks can continue after the offer was made and rejected.

TheÂ second step is to create an understanding of the plan, if there reallyÂ is such a thing, and how the owner was going to execute in that plan

TheÂ third step is to make a tranches investment offer.Â This involvesÂ offering a tiered incremental investment stream based on the ownerÂ executing to milestones correctly.Â Otherwise the original offer stands.

ThisÂ strategy has some beautiful implications: First is to have the ownerÂ remain and observe their operating style and business practices;Â learning priceless

information like difficult customers and how to handle them to subtle rules of thumb such as who are the most critical customers or which vendors are the key vendors.

Secondly, the observation process will provide the best indication on the owner's ability to execute.

Lastly, you get to see first hand exactly what type of leader the owner really is, which employees he goes to for fixing the worst in house situations, approach to problem solving, etc

The financial statement preparation steps are a very sexy part of the discussion. In fact it becomes a cornerstone to the company's inherent value assuming you have a developed product and revenue traction.

The financials have to be correct. Even though this may not seem like a priority it is actually a very critical step. Consider your company's long term strategy; if you are going for an entry into the US Equity markets you will need GAAP compliant financial statements. No underwriter in the US will touch your company until the financials have been audited and reviewed. This can be very expensive, you can save time by having a level of GAAP knowledge when reading these statements before hand.

Why do Western governments give Saudi Arabia so much respect?

Flexibility in oil production: Everyone knows Saudi Arabia is among the biggest producers of oil. What is less appreciated is that Saudi Arabia is the only producer with a flexibility to turn the tap on and off. No other oil producer has that power due to the production either being in private hands or the government being too poor. In other words, Saudi Arabia has the most control over world's energy prices - most critical for western economies.

Right now it is single-mindedly destroying its competitors worldwide by dumping oil -

[Saudi Arabia increases oil output to crush US shale frackers](#) - and this suits the west for the most part despite the collateral damage in small US producers - with the shakeout of Russia, Venezuela, Iran, etc.

Massive importer: Saudi Arabia is among the world's biggest arms importers - most of which is from US and Europe. It also imports billions of dollars worth of cars, machinery, medicines and other important items from the west. [Saudi Arabia \(SAU\) Profile of Exports, Imports and Trade Partners](#) It never hurts to be nice to your big customer.

Major investor: Saudi Arabia's central bank owns nearly \$800 billion in foreign assets - a big chunk of which is invested in US and Europe. [Saudi finance minister says no need to create sovereign wealth fund](#) - This money is very important to US businesses and came quite handy in times of crisis. It never hurts to be nice to your biggest investor.

Major partner in Islamic World & Middle East: Saudi Arabia is not just the most stable oil exporters, but among the most stable countries in the region. US has its bases there and also uses the Kingdom to influence the region.

How would a modern day naval battle be fought?

Here is one more idea that wasn't discussed much before.

The most successful modern navies today have a massive logistical arm backing them up.

We refuel our ships at sea, we replenish food at sea, we reload our weapons magazines at sea.

(Great picture of such here: [Vertical replenishment](#))

Â

The point is, no matter how slowly or quickly the battle goes, the US Navy isn't going home.Â We just keep refueling and reloading until the battle is over.

Â

Add to that our other three partners in the fight.Â If there is a role to play, the US Army, US Air Force and US Marine Corps will find a way.Â

Â

Then you add in additional non-Navy elements which will also come to play.Â Such as strategic bombing campaigns, computer network-centric attacks, UAV and satellite intelligence, and the fight becomes even more unfair.

Â

Several other QUORA questions have asked how can you defeat a US Navy Aircraft Carrier?Â A simple response is an intercontinental ballistic missile, but the counter response is that the ship would move and be missed.

Â

Our real-time satellite imaging negates that issue.Â We see a ship we want to kill, and we can fire non-nuclear ICBMs at it, and continue reacquiring the target until its dead.Â And we have a lot of ammo.

What is the life goal of a house cat?

Thank you Madalyn. This sure is a tricky question.

Cats do not have a vision but they sure do have lots of missions.

A cat may not have one big life goal but they have a set of daily goals that they like to accomplish throughout their life. They live for the day! :)

LÃ¼ffy, the Cat Executive Officer of our house would essentially have following goals that he makes sure are fulfilled to his personal satisfaction:

1. Knead Richa's head early in the morning. If there is no movement she might be dead. Bite the head to confirm.
2. When she gets up make sure you follow her when she goes to the washroom. You don't wanna be left out. Trust me the feeling is terrible!
3. Look for food. Food. Food, Where's the food? Nibble a little. Walk away. Now run for no reason.
4. What is that sound? Oh it is the litter box. It is being cleaned. Ok it is clean now.

Imma take a dump.

5. Well lets just take a nap now. So much has been accomplished. It feels great.

6. Bloody hell...! That's the sound of pigeons! Must must must reach the window.

7. Imma sleep.

8. Get up and eat some food.

9. Most of my work is done. Wait.. is that a laptop?? Hmm..



I Must SIT ON IT!

Does ISS have access to Internet If yes how do they deal with malware and other computer systems security threats?

Why is Twitter valued at 23.06 billion when all it does is make huge operating losses?

A company is valued on the present value of future cash flows. That is what determines valuation. Despite the losses, revenue is growing at a rapid clip, everyone continues to use Twitter despite user growth slowing down. The most important people on the world are verified on the platform and actively use it.

For those reasons plus a whole host more that is why it commands that valuation in the public markets.

Disclosure: I'm a former employee and I have a position in \$TWTR.

How far away are we from treatments that can reverse gum recession?

There are already treatment options available for gingival recession.

There are several over-the-counter, prescription, and professional treatments to manage tooth sensitivity resulting from exposure of root surfaces. Tissue grafting surgery is another option that can address recession.Â

Ask your dentist to help you determine the best thing in your situation and make sure that you address the cause of the recession. It is important to change the behavior(s) that caused the tissue loss in the first place.

Hope this helps.

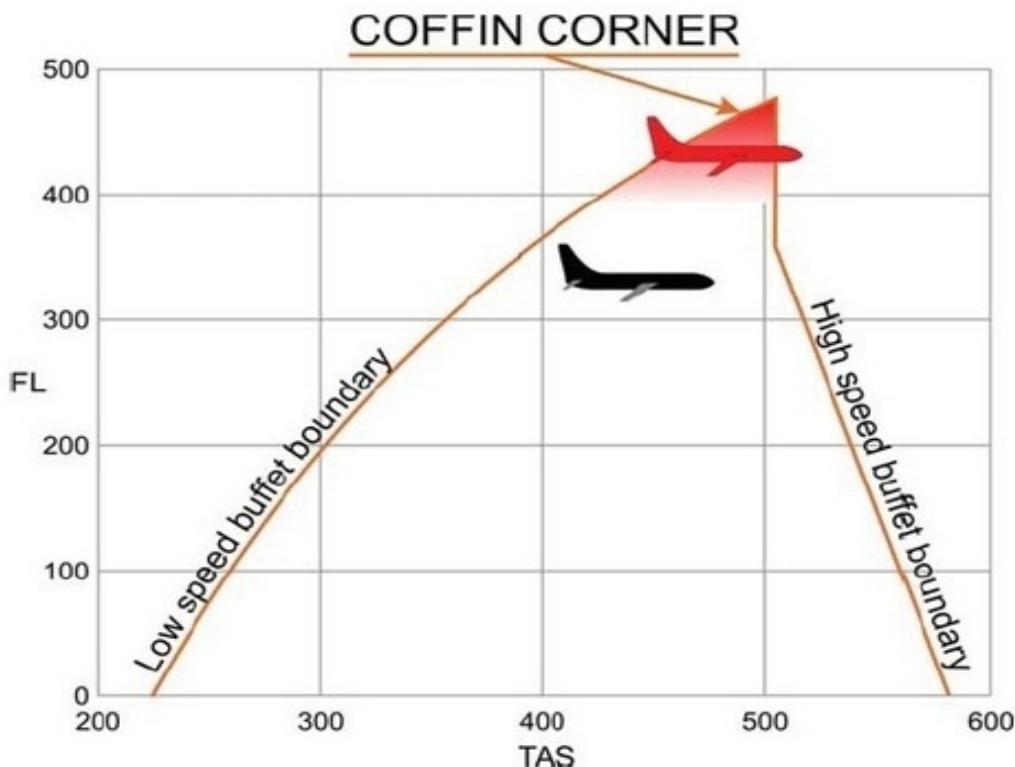
What happens if a commercial airplane tries to go outside the stratosphere?

The first thing that would happen would be that all of the engineers would start pointing and laughing at the pilots. With bruised egos, the pilots would start giving the engineers wedgies, leading to an all-out fracas, with slapping, scarf pulling, and pocket protectors and reflective sunglasses all over the place.

There's a place in the flight envelope called the **coffin corner**. This sounds like the back of the drug store in cold season, but it's where the air stops doing good things for the airplane. Air gets thinner as you go higher. Thinner air means less fluid to push down on for lift, but it also means that the speed of sound is lower. Once a body is going through a compressible fluid at the speed of sound, the fluid does what engineers like to call "funky things."

High-pressure boundary layers form and change how the air reacts with the airplane, often creating massive localized forces. The coffin corner is where you can't go any slower without stalling and can't go any faster without nearing Mach 1. That's the ultimate ceiling for your flight and is far below the top of the stratosphere. The practical ceiling is going to be under that because a little upset air up there can nudge you into one side or the other with potentially disastrous results.

Day one, lesson one of pilot school is "avoid disastrous results."



Which one should I choose a research scientist at Google or a researcher at Microsoft Research

Redmond?

You are one of the most fortunate people around. There are hard choices in life and this is not one of them. Either job is one of the best in the country.

I would choose:

- 1). The work that appeals to you most (but remember this could change).
- 2). The manager you'd prefer to work for (I might even make that #1).
- 3). Whether you'd prefer Seattle or Northern California.

Good luck.

What makes a great salesperson for software as a service SaaS?

Depends on what you are selling.Â There are two types of successful salespeople: Relationship AND Product.

Relationship Oriented Salesperson

The Relationship salesperson tends to follow what people more classically think of as a "salesperson."Â This person is very extroverted and they can build very quick rapport with strangers.Â This is the person that introduces themselves to the person sitting next to them on the airplane.Â Often this person is quick with a joke and very social.Â This person is adept at taking people to dinner, a ballgame, etc.

The Relationship salesperson is the best person for selling more commodity products.Â If you are selling office supplies, you want a relationship oriented salespeople.Â Likely if you are an ad network selling to advertising agencies, you want a Relationship salesperson.Â

The less your product is differentiated, the more you need a Relationship salesperson.Â

Â Product Oriented Salesperson

The Product salesperson is usually fairly introverted.Â They tirelessly understand the product and they are masters at follow-up.Â While they are competitive as the Relationship salespeople, you would not realize it the first time you met them.Â In fact, you might not notice them at all when you first meet them.

The more unique your product is, the more you need a Product oriented salesperson.Â This is the person who is going to sell the customer on the benefits of the product and will likely not ever take the client to the ballgame or be the late-night guy buying rounds of drinks (instead, the product oriented salesperson will be in their hotel room sending follow-up emails).

Which one is right for me?

Most companies, even SaaS companies, sell a product that is fairly commoditized -- and in that case you should hire the Relationship salesperson.Â Be really truthful with yourself about

Is there a modern day equivalent to Ben Grahams The Intelligent Investor?

A great book is Margin of Safety by Seth Klarman. It's not available in print (at least not for under a few thousand dollars), but you can find unauthorized PDFs online if you look hard enough. It might not be the perfect answer to your question however as the material in Margin of Safety is now dated to a certain extent.

Instead of looking for a book however, I would suggest reading all of Berkshire's shareholder letters. Go back 10-20 years, print them all off, and read as if it were a book.

The modern Graham *is* Buffett. He was Graham's star pupil, and is the one who has built on the ideas of the Intelligent Investor better than anybody. In addition, by

reading in one shot, you can see how Buffett's style has changed over time. Those who see him on CNBC today do not get a complete picture of how he built Berkshire and how his core investment philosophy has evolved from a Graham-Dodd investor to the Munger-Buffett style of the 80s and 90s, to the "I need to deploy \$20-30B every year" investor he is today.

What are some drawbacks of being a trader?

The big one is rather surprising.Â You don't make that much money if you are trading with limited capital.Â Most people think of traders are hyperwealthy, and there are some traders that make a ton of money.Â However, they make massive amounts of money because they are trading massive amounts of other people's money.Â If you trade with limited capital, you will find it extremely difficult to even break even, much less make a decent living.

It's an extremely stressful job because you are constantly reminded of your own incompetence.Â You will mess up constantly even if you are good, and it's often not clear whether you are making a mistake or if you have bad luck.

One other thing is that a lot of trading involves managing human psychology, and a lot of being a good trader involves understanding deeply how your own mind works.Â You have to go deep inside your soul, and look at yourself through the mirror of the market.Â Sometimes this involves confronting rather unpleasant truths about yourself.

You have to deal with some very, very strong emotions.Â Trading is ultimately based on fear and greed, and you feel the neurons in the deep core of your reptile brain firing, and you have to find some mechanism to keep everything under control.Â The problem with trading is that it can be very, very addictive, and if you aren't very, very careful, then you end up seeking the addictive rush rather than actually making money, and this can be wildly self-destructive.

Rafael de Oliveira?

It's just scab. Nothing to worry about.

This type of question must be answered by your dentist because only him is able to examine you personally.

Rafael de Oliveira?

I think the best place can be Portugal. Cidade do Porto.

How does Warren Buffett determine the intrinsic value of companies?

This is what he says in the Berkshire's Owners' Manual:

The calculation of intrinsic value, though, is not so simple. As our definition suggests, intrinsic value is an estimate rather than a precise figure, and it is additionally an estimate that must be changed if interest rates move or forecasts of future cash flows are revised. Two people looking at the same set of facts, moreover — and this would apply even to Charlie and me — will almost inevitably come up with at least slightly different intrinsic value figures. That is one reason we never give you our estimates of intrinsic value. What our annual reports do supply, though, are the facts that we ourselves use to calculate this value.

I decided to practice dentistry again after a long time of absence years To get the license I need to re train under some specialists for 6 months and to re exam I feel depressed What makes me feel worse is that the center that I will train at has a lot of fresh graduated dental students and I am 31?

I don't think you should be depressed. Every and each one of us have ups and downs.

Your new colleagues will like to have contact to someone with more experience, to talk, to learn, and vice-versa.

And it's a opportunity to make a new network, new friends, and to learn more and better.

I wish you good luck to your new venture!