

NEWS FROM COMPUTER SCIENCE AND ENGINEERING

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BETA

Free as in speech and our awesome BBQs.

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OPINION, FEATURED

Not Just the NBN

The parties tackling technology this election

Beyond the issues of marriage equality, the carbon tax, asylum seekers, and so on, a whole different set of issues sit largely untouched by the major parties: technology ones. PRISM, whistleblowers, UK censorship, broadband infrastructure, piracy negotiations - these issues are recent headlines and we should care. Why? Because we're the ones that can. We're the next wave of the technology industry; the tech-native, tech-literate representatives of our generation and the product of the early days of the information age. These issues are more relevant to us than anything and we're the few that are trained to understand them. You've probably heard enough about the major parties so I'll give those a rest. There are a few parties running in this election campaigning on technology issues: the Wikileaks Party, the Future Party, the Senator Online Party and the Pirate Party.

A quick aside: you may be under the impression that voting for a third party is a waste of a vote. This is true in the US but not in Australia.

In Australia, your vote flows down your preferences until all the seats are decided

so your vote isn't thrown away. Even if your first preference doesn't win a seat, if they get enough votes they may receive federal funding. Third parties often double as political advocacy groups and influence the decisions of the bigger political parties.

The Wikileaks Party stands for transparency and accountability in government. Running for a Senate seat in Victoria, Julian Assange started the Wikileaks Party with the same political principles as those of Wikileaks: the free flow of information, internet freedom, and whistleblower protection. The Wikileaks Party have put up two candidates for the NSW senate seat: Kellie Tranter, a lawyer and political activist, and Alison Broinowski, a former Australian diplomat.

The Future Party is a party of engineers and technophiles focused on investing in technological and scientific solutions for Australia's future.

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OPINION, FEATURED

Not Just the NBN - contd.

One of the Future Party's main selling points is Turing. A proposed high-population charter city centred around a STEM-centric university. The proposed city would sit between Sydney and Canberra and be connected by high speed rail. They also plan to increase investment in education and scientific research and upgrade energy infrastructure to turn Australia into the model for a truly technologically advanced country. The Future Party is running two candidates in the Senate: James Jansson, a UNSW PhD student, and James Haggerty, an employee at the tech startup Freelancer. They're also running a candidate for the Kingsford Smith House of Representatives seat, Georgie Lucas.

The Senator Online Party (SOP) believes in direct democracy: using technology to keep the general public informed on issues, bills and policies in parliament. The SOP aims to allow citizens to have direct influence on parliament by allowing them to vote on bills going through parliament online. The results of this polling will determine which way the SOP members will vote in parliament. The SOP have three senate candidates for NSW: Tim Ferguson, political commentator; Tony Barry, actor; and Don McKinnon, former athlete.

The Pirate Party comes out of the international Pirate Party movement; loosely affiliated with the Pirate Bay.

The Pirate Party aims to protect civil and digital liberties, free culture, and free speech; and believes in participatory democracy, transparency in government and personal privacy. Beyond technical issues, Pirate Party policies are generally similar to those of the Greens. In NSW, the Pirate Party has reciprocal second preference with the Greens and is running two candidates for the Senate: Brendan Molloy and David Campbell.

I spoke with Brendan Molloy about what he thought were the most pressing technology issues in this election. Full disclosure: I'm a member of the Pirate Party. However, I chose to interview Brendan Molloy because the Pirate Party's platform covers a wider range of issues than those of the Wikileaks and Future parties. I've left out the bits referring to the party in an attempt to keep things neutral.

What do you think are the most important technology issues coming into this election?

The desire of our federal agencies to implement a wide ranging data retention regime, with warrantless access to all sorts of metadata, is certainly of major concern, especially when viewed in light of the recent revelations about NSA surveillance. The discovery of the broad and unaccountable use of S313 of the Telecommunications Act to remove numerous websites from the Internet

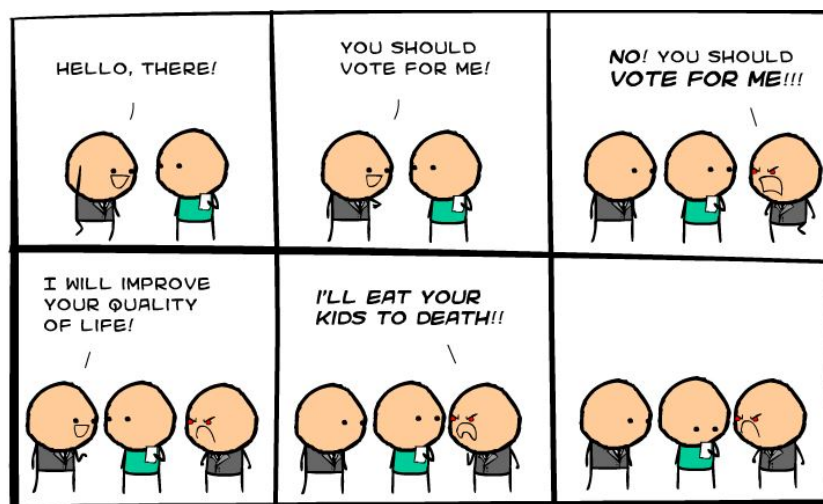
shows that the government's internet filtering scheme was only one layer of a broad censorship architecture, most of which has been imposed by stealth. We need more awareness of what is being done in our name.

In relation to copyright, large media companies and governments have long sought to undermine private communication and other fundamental rights in the name of copyright enforcement. Simple participation in cultural pursuits risks being criminalised and marginalised in the name of copyright. Now that technology affords us the ability to bypass the middlemen in content creation, production, and distribution, it seems that there are large monied interests who are determined to hobble technological advances and information freedom in order to protect their failing business models. And when you consider not only the civil rights, freedoms, and privacy that would need to be traded off to protect those models, but also the crippling of innovation and technological advances, then it is not a price worth paying. A business model that must violate basic rights to make money should not exist.

The full text of the interview with Brendan Molloy can be found at bit.ly/192Ffa6.

JOEY TUONG

Cyanide & Happiness Comic ©Explosm.net, comic 2979



OPINION

Bits in a Bunch

CSS

Don't get me wrong here - CSS is probably the most powerful presentation semantics language that exists today and is arguably the most widely used as well, thanks to that little old thing called the Internet. Unfortunately, it was created by a bunch of pseudo-academics in a time when web pages were nothing more than a bunch of paragraphs with groovy new "hyperlinks" scattered all over the place. The language has been since extended, or should I say mangled, into something which can describe much more complex layouts than those imagined in the 1980s. Even though the use of CSS has changed considerably, the core behaviours of the language have remained the same; haunting web developers across the globe over 3 decades later.

The biggest, and oldest, problem with CSS is that every browser implements a different subset of its features. Even when two browsers each implement a feature, it can behave in completely different and unpredictable ways. Additionally, when a browser development team decides they would like to implement a CSS feature without making it conformant, all they need to do is add a browser-specific prefix to its name and then suddenly all accountability for its failures has miraculously disappeared. Hurray! This creates an incredibly unpleasant environment where web devs are basically writing several small variants of the one language at the same time. All browsers

need to be covered, so testing efforts go through the roof and code can become barely readable. This is the reason web developers contemplate ending their humble existences when asked to support IE6.

CSS also has an interesting take on defining layouts. It provides plenty of tools for text-based documents which scroll and flow downwards, but as soon as you break this mould - say with something like a full-screen layout with docked panels or proportioned sections; or even something that just needs to flow horizontally, like a menu - you're going to have as much fun as a castaway trying to make a boat from chest hair, leaves and saliva. CSS gives you no way to natively express these constructs, so instead you must resort to using its confusing, inconsistent, and inflexible box model to hack together constructs yourself. I won't go into detail about the workings of the box model for space constraint and ethical reasons, but its shortcomings include: having no simple way to vertically middle-align one box within another; having inconsistent margin behaviours, collapsing on each other sometimes and not doing so other times; having crazy behaviours for proportional width and height measurements - 100% almost never means what you think it does; having table behaviour that is absolutely and inconceivably screwed up; and having no simple way to position a series of boxes

horizontally without everything freaking the hell out when the window's width is exceeded.

This is just the tip of the iceberg. I could speak chapters on the plethora of text-wrapping properties you have to adjust to get anything sensible happening, and how frustrating it can be when the mysterious "specificity" of a CSS selector causes some style written in some other file to take precedence over yours, but I don't want to completely put you off CSS. It is improving, albeit at an incredibly slow rate. Until recently, "improvements" in CSS have generally been extensions on existing concepts, which were dated and clumsy. There is a recent movement now towards creating new box model behaviours from the ground up for the modern day web - most notably the "flex-box" model. It's still in early days: it functions inconsistently across browsers, is missing features that you simply must have, and often does something completely different to what you thought it might. But their aim is true, and I have faith that the great elders at the World Wide Web Consortium will deliver us our saviour in time. Until then, we're going to have to continue wading through that steaming cesspool of ageing, 80s-nerd filth that is CSS - and we will do it with our heads high and our noses firmly pegged.

LUKE TSEKOURAS

CAREERS

Startups

Every company attending the UNSW startups expo last Tuesday was given a maximum of 3 minutes to present their ideas. Beta attended and we have compiled a list of the companies with a little info as to what they are about.

swiftly.com (by 99designs) - Launched 5 years ago, this website aims to connect users looking for small, fast design fixes with designers who can provide them for a flat \$15 fee to designers. 99designs is currently the largest database of designers in the world, with 220,000 designers connected to it.

AppInstruct - A mobile app consulting business. They help with strategy,

legal issues, mobile development, user experience, marketing, explaining business plans, etc. If interested in working with them, contact Nic at nic@appinstruct.com

Astrepo - "Never miss events again": a solution to the push notification problem. Their app aggregates information from multiple social sites, uses an intelligent algorithm to determine your interest in

events, and sends a push notification to your phone informing you about it. Future plans include getting social events directly from services and hotel websites to keep you informed. Visit <http://www.astrepo.com.au> to find out more.

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CAREERS

Startups - contd.

Collaboreat - Making the organisation of group meals easy. Collaboreat makes dinner parties more rewarding by providing tools which enable users to: create Facebook events, get recipes, host competitions, and allow friends and family to rate their gatherings.

Earwarm music - The service that pays you to listen to music. User experience has been deteriorating and digital marketing is too expensive. With earwarm, users are more interested in discovering music and any other products musicians are offering. Thus, musicians end up with more revenue.

Edisse - A watch doubling as an automatic panic button for elderly people who've fallen down. It includes global coverage of products in use to provide better data analytics than normal panic buttons, and collects information about risks and locations with the highest number of falls to send to the user's family.

Feedback Loop - What's a useful formula for problems and businesses? Feedback. The Feedback loop aims to provide reviews and testimonials at feedback.com.au.

FrameFish - See how eyewear looks on you straight away. Frame fish makes online shopping for eyewear easier by enabling users to place products on a selfie, thus getting a sense of how products look.

General Assembly - Education across technology. The content of this education site is provided by practitioners of the workforce seeking to create the developers they want to hire. The three main principles of General Assembly are: people before machine; learning by doing; and journey over destination.

IntiMate - Share and play with intimate content. Sharing is usually more boring than playful (hence why snapchat exists!).

IntiMate aims to give you more - a fully private 'room' for you and your partner(s) where you get full control of the content. Features include being able to record facial reactions to messages.

Issue - The digital magazine for the next generation of publishers. Users get to choose what blogs or websites go into their edition, and easily share it with friends through a variety of social streams. Now in UNSW venture space.

MigrainePal - Helps manage migraines for patients. Most solutions help you track your migraines, however MigrainePal helps you uncover triggers that cause your migraine, giving you a way of preventing your migraine and reducing the frequency.

OddSwap - Selling second-hand items in a local area. Sellers can upload multiple items with individual tags, and choose whether to accept a buyer.

Foogi (the frustration killer) - An app to combine all calendars (also known as whatsapp for calendars). www.foogi.me aims to be a 3 click solution to calendaring within a group or organisation.

Park My Van - The application for the campervan community. Park My Van allows users to easily find parking locations and hire locations for campervans.

Pocketbook - The best way to track your expenses. This application pulls in your live bank account data, automatically detects bills and categorises your spending all in one place giving you more control over your finances. Winner of the Singapore Innorise Startup Challenge with excellent future financial prospects, Pocketbook is looking to hire - contact hello@getpocketbook.com.

Pocketfire - The fire front solutions for firefighting. Pocketfire focuses on mapping, allowing firefighters and users

to share hazards in real time through photo geotagging as well as multi-agency sharing.

Prospection - Creates reports for pharmaceutical companies. The company is basically about big data handling and has features such as mapping sales globally in order to create trends and predictions about pharmaceutical products.

Saljar group - Not so much a startup, rather a sponsor for startups. The Saljar group has commercialisation and legal support, and would like to be able to help anyone looking to begin a startup.

Taxi 247 - Developed by a 17 year old, this a phone app connects taxis with passengers. The app enables users to call the nearest free taxi, and as an added incentive drivers are paid to use it. Users may also use the software to make free calls to other users as a way of developing a network.

Tripgo (by skedgo) - A multimodal trip planner that includes routesmaps, a calendar system for events, and can warn you of lack of travel time. It also has an itinerary application called wotgo.

Ureferjobs - Reducing cost of recruitment by referring peers through your referral network. Since you are connected to your own referral network it's cheaper, and since you're hiring peers you get better value for it.

NSI (new south innovations) - Pitch your ideas for a potential angel investor. NSI is a company of advisers where you get to work with world class technology, researches and facilities. NSI basically aims to help student innovations on campus.

WEN DI LIM



OPINION

3D Printing - Ethical Issues



The way 3D printing technology works is that they create a three dimensional object by building successive layers, until the entire object is complete. It begins with a digital file that what is usually a Computer Aided Design (CAD) file that is imported into a 3D modeling program if any changes to a design needs to be made or edits and then can then be exported for the 3D printer. The 3D printer reads this file, and proceeds to create each layer exactly to specification. Each layer can be done with different materials such as plastic, metals and more as technology advances.

As such, there are many ethical issues which are associated with this technology. Sites such as Thingiverse allow designers to easily upload designs for users. Anyone with a 3D printer can easily download these files and print them, without much hassle at all. This circulation of designs presents interesting ethical choices. Is this person uploading the design of a gun the one to blame? Or is it really the choice of the individuals who are choosing to download and to print a gun?

Keys

Copy keys, with most common current techniques has always been assumed to be a pretty black and white system, with the common case that copying your own keys is okay, and it is unethical to copy other people's keys. With the progress in 3D printing the ability to replicate keys of different types has brought about many issues.

In the general case is it ethical for you to print a copy of your own key? You own it so it is pretty much okay. Though with improvements in computer modelling and

photo recognition, it has become easier to reproduce keys from photographs and scans. However this leans more towards the unethical practices of the individual, and is basically the same as stealing someone's property.

Intellectual property

Piracy have anyways been a big issue in the digital age, we always hear news about people downloading music, movies, games, software etc which they do not have rights to. The proper term for this is copyright infringement.

Only a small number of 3D printed objects will get covered by intellectual property: those protected by copyright and or an active patent. But for those who don't know, before you print the object out, the model of the object is stored as a .stl file on the computer. These files can be universally printed if you have access to a 3D printer. So is there copyright on the file?

Stl files are certainly protectable by copyright laws, as stated in the copyright laws: "maps, globes, charts, diagrams, models, and technical drawings, including architectural plans" are included within the scope of works eligible for protection. However this does not mean that every single design file is protected by copyright. As any given diagram is the only practical way to virtually represent a physical object, a copyright on all diagrams would prevent anyone from making any virtual versions of the object.

This means that most files don't have intellectual property unless it is a design piece or the owner has successfully obtained a patent. But what if you copy the files which do have a patent on them?

Well, first of all you will be breaking the law as it is illegal to copy something that has been patented. However in the 21st century, patents have increased by 10 folds. Companies are patenting everything in order to gain an economic advantage instead of releasing innovative design to the public while protecting the designers. For example, Apple patents its round edges and their swipe to unlock design. Patenting maybe a legally correct thing to do, but companies are taking advantage of

it for unethical reasons. Everyone is fast becoming patent bullies where lawsuits of millions of dollars are being fought over something ridiculously minor.

Weapons

As 3D printing technology grows, and gets more advanced, it touches the fine line of printing illegal material, with a lot of media attention being focused on and directly effecting the gun control argument. This issue has gain a lot of prominence this past year as 3D printing has improved immensely. We first saw this discussed in a documentary called 3D printed Guns by Vice which follows the pursuit of Cody Wilson and his Austin-based company, Defense Distributed, to make 3D printed gun files readily available to everyone.

In response, 3D printer manufacturers have been quick to distance from Wilson and his Austin-based company, Defense Distributed. Crowdfunding site Indiegogo dropped Defense Distributed's printing project in response to complaints. After the Sandy Hook massacre, Makerbot yanked all Defense Distributed's CAD (computer-aided design) files from Thingiverse, a clearinghouse site for the 3D printer community.

While we know why all these steps were taken, is it still right to censor people on the internet? Not only that, is a 3D printer maker responsible if someone uses its printer to manufacture a gun that is then used to kill someone? Personally, I don't think it is the responsibility of the maker. The gun being made is a tool, and like all other tools such as knives, ropes etc it has the potential to be used for harm. Therefore, the users of these items should be held accountable for their actions.

The issue gets slightly more complicated when it becomes easier for people to gain access to a 3D printed armoury. While accessible technology is usually a great thing with advancements in providing food to impoverished third world countries or medical assistance in rural areas, the ease of access to a 3D printed armoury means that anyone, including minors, can now obtain one.

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OPINION

3D Printing - Ethical Issues - contd.

So how do you ban a file on the internet that is extremely easy to gain access to? It's pretty much impossible. Does that mean we should ban minors from purchasing a 3D printer on the off chance that they will print a gun? Well, parental control options can be included to prevent minors from printing items without supervision.

Credit card scanners & 3D printing services Card skimmers are nothing new, but for them to successfully fool people, you need them to fit in perfectly with the ATM. Using 3D printers allows for customisation, which makes it very easy to print a card slot overlay. A gang in Texas successfully stole \$400,000 using this method before they got caught.

In addition to that, external 3D printing services do exist, such as i.Materialise. If they see the designs for a 3D printed skimmer, they would reject it. However, imagine a scenario where the printing company doesn't know the purpose of the

item being printed. Does the printing service company hold a responsibility for not printing these as well? What if they were for legitimate purposes? Or suppose they were components for a bomb, and were complicated enough that the company didn't realise what they were for. Is the company then an accomplice in a potential bombing?

On the other hand if a company used a 3D printing service as a critical component in a rocket, and the rocket failed as a result, who is responsible? Is the 3D printing service company responsible because they messed up the print a little bit? Or is the designer's fault for not double checking the end product? These are some questions you should think about when endeavouring to print things for high risk projects.

Medical devices

3D printing has enabled customised medical casts and implants to be created at a really cheap cost. A patient had

75% of his skull replaced by a 3D printed implant. Elsewhere, a man has enabled several children that don't have fingers to have robohands at a very low cost when compared to the technology offered by medical practices.

If there was some issue with the print, who would be responsible? Perhaps the person who uploaded the design knew there was a fault and didn't disclose it? Or is the person printing the design meant to accept all responsibility for the object they have printed?

So far, we've covered three topics in 3D printing that have various ethical issues. You've seen the questions, and heard my opinion. What is your take on the whole thing?

SAM LI, VINCENT WONG,
CHRIS MANOUVRIER,
ARI GORNEY

News in Brief

Not So Fast

The Victorian police have had to refund nearly 1000 drivers fined for speeding on Melbourne's Western Ring Road after a recent review found that signs indicating speed zone changes near a construction site were not adequately displayed. Perhaps the police should not be so quick to fine people in the future.

With a Bang

A Swedish father's inattention made the birth of his young daughter quite memorable. While rushing to the maternity ward, his wife in the passenger seat of their car started giving birth. Distracted, he drove his car into a ditch before rolling it four times. When the car came to rest, his wife and two other children were resting on the back seat but he could not see his newborn child. Finally, he spotted her "under her mum" beneath the passenger seat. Emergency workers, alerted by passing motorists,

drove the miraculously unhurt family to the hospital. He has since said he would just roll with the eventful birth.

Highwayman

A man has been arrested after stealing a road in northwestern Russia. He has confessed to using an industrial machine to dismantle the 82 reinforced concrete slabs which made up a road connecting the village of Parcheg to the Vychegda River. The slabs, worth a total of 200,000 rubles (\$6,100), were loaded onto three trucks which were later pulled over by police. The plan was solid, but the man is facing up to two years in jail for the crime.

Fruity Trademark

Apple Inc. is trying to trademark the term "startup" for a brand of services delivered through its retail stores. The chosen name suggests it is targeted towards novices but the trademark application also mentions data recovery and diagnostic services.

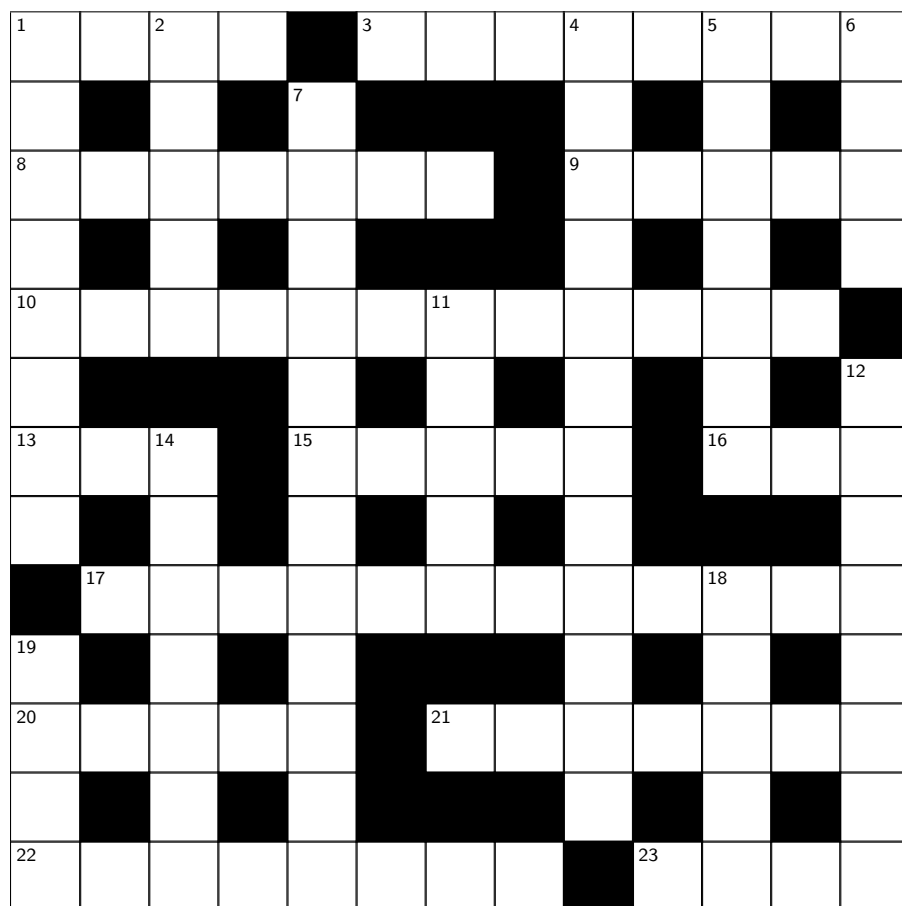
This suggests the brand could be a label for all things delivered through the Genius Bar. Unsurprisingly, the startup industry isn't happy about this, with Australian site StartUpSmart labelling Apple as a "intellectual property bully". The application is in its early state so it will be a while before more juicy details will emerge.

PATRICK CHUNG



ENTERTAINMENT

Crossword



Down

1. Carbonated caffeinated beverage (4,4)
2. Preserved animal body
4. Put in alphabetical order
5. Tanned animal skin
6. Prefix: Half
7. Aztec god - Feathered Serpent
11. Tropical fruit
12. C₂H₄
14. Military powermonger
18. Animal tusk
19. Low pitch, music

OSWYN BRENT

Across

1. Unwakeable sleep
3. Divine acts
8. Calculate
9. Hymn
10. Study of secure communication
13. System of rules
15. Not asleep
16. Rodent
17. Possibility to solve easily
20. Smell
21. Inspiring awe
22. To remove from active participation
23. Class of objects with common traits

Last week's solution:

	N		M		T		C		I		D	
R	O	T	A	T	E		L	I	N	K	E	R
	D		R		M		O		H		L	
P	E	E	K			P	A	C	K	A	G	E
O			U			U		K		L		T
V	A	M	P	I	R	E		F	E	L	I	X
	R				A		S				O	
A	G	I	L	E		S	C	A	L	I	N	G
	U		O		S		O		I			E
E	M	U	L	A	T	O	R		N	O	R	M
	E		I		Y		P		E		E	
I	N	S	T	I	L		I	M	A	G	E	S
	T		A		E		O		R		F	

ENTERTAINMENT

Puzzlers

1. How many places are there on the earth that one could walk one mile south, then one mile west, then one mile north and end up in the same spot? to be precise, let's assume the earth is a solid smooth sphere, so oceans and mountains and other such things do not exist. you can start at any point on the sphere. also, the rotation of the earth has nothing to do with the solution; you can assume you're walking on a static sphere if that makes the problem less complicated to you.

2. Five philosophers sit around a circular table. In front of each philosopher is a large plate of rice. The philosophers alternate their time between eating and thinking. There is one chopstick between each philosopher, to their immediate right and left. In order to eat, a given philosopher needs to use both chopsticks. How can you ensure all the philosophers can eat reliably without

starving to death? (Hint: Think concurrency.)

3. On a nice summer day, two tourists visit the Dutch city of Gouda. During their tour through the center, they spot a cozy terrace. They decide to have a drink and, as an appetizer, a portion of hot "bitterballs" (bitterballs are a Dutch delicacy, similar to croquettes). The waiter tells them that the bitterballs can be served in portions of 6, 9, or 20. What is the largest number of bitterballs that cannot be ordered in these portions?

Don't forget to email your solutions to:

beta.puzzles@cse.unsw.edu.au

THE BETA TEAM

CSE EVENTS & SOCIETIES

Upcoming Events

CSESoc Weekly BBQ

Tuesday 11.30am-12.30pm

Physics Lawn

CSESoc's Weekly BBQs are on every Tuesday this semester

CSESoc Poker Night

Thursday, August 5th, 6.30pm-late

CSE Seminar Room, K17

\$3/5 Arc/Non-Arc for pizza and drinks

Open to players of all standards, just bring your best poker face and we'll provide the rest!

CSE Revue goes to Law Revue

Friday, September 6th, 7:30pm

UNSW Science Theatre

We'll be going as a society to see "Law Revue 2013: Lexis Case Law Masacre", on Friday of Week 6 (6th of September) at the UNSW Science Theatre. Come along and support your fellow theatrical society. Doors open 7:30pm.

RSVP by emailing social.head@cserevue.org.au or joining the Facebook event.

UNSW Open Day

Saturday, September 7th, 9am - 4pm

UNSW

Open Day is your chance to see UNSW up-close and personal. Chat face-to-face with our academics and our current students - have all your questions answered. Find the right information to help you choose your ideal degree from Faculties and Schools; Learn more about life as a student at UNSW - including study costs, admission, accommodation, student services and more. Experience the UNSW vibe - grab some food, listen to some music, and get interactive with student and Faculty displays all over campus.

EVELYN CHENSEN

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