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new doc, new gadgets

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Learning from the Crisis.....

If the global financial crisis is yielding any benefit, perhaps it is leading to an overhaul of the way our financial and commercial institutions do business. Technological development is dependent on the interrelationship between financial institutions and other businesses and it is vital that we now stop to consider whether the increasing *laissez faire* attitude of government towards the business support infrastructure has gone so far as to endanger us all.

At a keynote speech at our seminar "Leadership in Times of Crisis" at the British Institute of Technology and Ecommerce, the former Prime Minster of Malaysia, Tun Dr Mahathir Bin Mohamad highlighted how widespread abuses throughout the financial sector had contributed to the crisis and the need for government led structural change. We are printing his speech as a salutary reminder of the need to learn from the mistakes of the past.

Near to our London offices, the G20 summit met in April with proposed methods for structural change and now that the speeches and handshaking have ended we hope that actions as well as words will be applied to the crisis. In this issue, we look at the G20 proposals and in a spirit of optimism, hope that our financial institutions will take note of the need for affirmative action.

As part of its World Hi-Tech Forum series, BITE will be hosting an international forum on China at the Queen Elizabeth II Conference Centre in London on 8th October. As a prelude to that event, China figures largely in this issue with a look at the development of its high tech economy and cultural traditions.

Elsewhere in *eBritain*, Graham Jarvis considers how server virtualisation can improve the efficiency of resource allocation and management. Steve Furnell notes how the move to increasingly mobile computing and communications is creating even bigger security headaches. On a lighter note we're always interested in looking at consumer gadgets and Laura Mackay considers the latest incarnations of Dr Who and James Bond and their gadgets, past and present. There are always plenty of business books to review which tell us how we should be managing and Robert Murray takes a wry look at some of the advice.

We also have the latest research and I hope that those interested in submitting features or research papers will continue to contact me.

Dr M Farmer
Editor In Chief

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Dr Who, Bond and the War of the Gadgets

Laura Mackay considers the new Dr Who, Bond and gadgetry

The eleventh Doctor Who, Matt Smith will take up his position as saviour of the universe at the controls of the Tardis next year. In David Tennant he has a class act to follow, but Smith has a youthful charm all of his own, evident in his role as D.S. Dan Twentyman in *Moses Jones,* shown on BBC2 in February this year. In an interview with the BBC, Smith described himself as 'a rather elaborate dresser,' so he should fit in with the quirky nature of the programme, its futuristic gadgets and its fanatical fans. While Daniel Craig has brought a rugged sex appeal to James Bond, Smith has an opportunity to bring his own style to Doctor Who and develop his own charismatic allure.

As a young child I found the Daleks and their electronic staccato voices quite scary. I never really had a particular passion for the *Doctor Who* series in its early naff incarnation of wobbly sets, plastic rocks and tacky costumes. Instead, I was an avid follower of James Bond, the dry humoured Roger Moore as Bond to be precise. Bond was cool, and the Doctor not so much - and that was that. However, having donned retro clothing in later life and realised a penchant for velvet jackets, I have now come to an altogether different conclusion.

Snazzy gadgets

While most of us cannot afford anything approaching the snazzy gadgets displayed in *Doctor Who* and the Bond films, they remain aspirational. Bond's are flashy and sometimes even available in the real world for those rich enough. The Doctor's tend to be quirky, futuristic and a little on the crazy side. Secret Agents and Time Lords alike must be

able to communicate effectively, travel quickly and protect themselves and others - prerequisites of the job you might say. With a little help from their gadget toolbox they can acquire an unbeatable super-hero status.

Bond has always been the proud owner of the standard spy comms devices- even in the sixties he had wireless ear pieces, intricate watches and lethal pens. More recently, Daniel Craig's 007 has gone for a more conventional approach with the Sony Ericsson C902. This shiny black, slim and slick looking mobile certainly has the look of a top gadget, but does it live up to expectation? Well, I happen to own one - yes, contrary to my earlier statement, an overdue upgrade enabled me to be able to afford this phone - but it does have its faults.

The menu layout and icons are bold, colourful, and easy to read and follow, but the software is slow overall. There is a delay when moving around from one feature to the next; frustrating when using the phone for the first time. These miliseconds are important to Dr Who and Bond! The 5-megapixel camera is wonderfully compact, and I have been able to take some outstanding pictures. However, it doesn't always cope as well under dim light as an ordinary digital camera would, and again it is slow to process the picture. Even more annoying is reviewing the photographs - an extremely slow procedure that sees the mobile freeze or, on occasion, crash. I don't use the phone as an mp3 player but I do use it to listen to the

radio, which is a simple and useful utility. It is a very multifunctional phone - you name it, it has it - but its lack of speed does let it down. For Bond it was like a piece of jewellery, for the rest of us, it is magnificent to look at but is definitely in need of a software upgrade.

Time zone communication

Doctor Who's Nokia 3200, Samsung D500 and BenQ-Siemens EF 81 may not look as neat and sophisticated as the C902 (although that may come down to personal taste), but they all have something special in common. These phones are upgraded by the Doctor in order to enable him and his sidekicks (Rose, Martha and Donna) to communicate across time zones and receive signals in unusual places. The 'superphone' is an invention formulated by the ninth Doctor, played by Christopher Eccleston, and has used ever since.

Funnily enough, it's pretty difficult to review this remarkable feature, but the superphone does seem fairly handy. The Doctor's 'women', as I like to call them, can contact the Doctor if they're in trouble and vice versa, and Rose, played by Billie Piper, is able to phone her mother from different centuries and parallel universes. Bond's C902 has a lot to compete with here, but then he doesn't require a time travelling aid. I still wouldn't swap my C902 for a Nokia, Samsung or Siemens but then I've always owned a Sony Ericsson of some description and I am not a stickler for change!

Weaponry is a necessary accompaniment for Bond as he battles with violent criminals to protect Queen and Country. In *Quantum Of Solace* Bond uses a Walther PPK, a Walther P99, a SIG-Sauer P226 and a Heckler & Koch UMP, not that I know anything about these firearms, but they seem to do the trick for him. The Doctor, however, doesn't use aggressive weapons very often at all. He is more inclined to use his brain power against his opponents, with a little help from the Electronic Sonic Screwdriver.

The Sonic Screwdriver

In 1968 the Electronic Sonic Screwdriver first appeared on our screens in the hands of Patrick Troughton's Dr Who (remember him?) in *Fury from the Deep*. The writers, finding it too useful to fall

David Tennant with Michelle Ryan as Lady Christina De Souza in the Easter special of *Dr Who*

back on, gave it a break during the eighties and early nineties. Since the return of the *Doctor Who* series on the BBC the Doctor has been brandishing his Sonic Screwdriver like a hi-tech Swiss army knife to combat a multitude of problems. It can open doors, break locks, isolate power sources, scan for electrical activity, and bring back the faces of people having had the rest of their bodies absorbed by a grotesque monster played by Peter Kay in *Love and Monsters.*

The Screwdriver broke during a hospital radiation stunt in *Smith and Jones* but was easily replaced by the end of the episode. The Sonic Screwdriver has been replaced previously with a little help from the Doctor's TARDIS (Time And Relative Dimension In Space), a machine that enables him to travel through time and space and create obscure gadgets, whilst posing as a 1950s police box. Bond's travelling machine is not so unique in shape or size but it does have a few tricks up its sleeve. After a brief contract with BMW, Bond's MI6 returned to good old British manufacturer Aston Martin in the latest films *Casino Royale* and *Quantum Of Solace*. The Aston Martin DBS V12 housed a compartment for Bond's

Walther P99 and a medical kit, which included a defibrillator and poison antidotes. The kit linked up with MI6 HQ where medical experts could guide Bond through his poker poisoning crisis in Casino Royale. I'm not sure if this medical system would be of great use to the average Mr and Ms Bloggs on the street, unless they enjoyed a spot of espionage or had an ongoing heart condition. All the same, the car itself is stunningly beautiful and possesses some serious power. Sitting lower and wider than the DB9, the car can reach a top speed of 191 mph and its six litre engine produces 510 bhp - not a vehicle for the faint hearted.

Time travel

Doctor Who's mode of transport is slightly more tongue-in-cheek, and not as readily available for the affluent of this world. His deceptively small box of tricks masters retro chic better than a whole host of velvet clad, aviator goggles wearing 21st century indie bands. The appropriately named Chameleon Circuit, a device which enables the TARDIS to blend into its surroundings, is conveniently broken, leaving the TARDIS with police box iconic status! Nothing can break into the TARDIS, keeping the Doctor and his latest woman safe inside the huge (dimensionally transcendental) interior. The exterior can be surrounded by a defensive forcefield, preventing penetration of the hull, and the TARDIS can translate alien languages. If Bond's car could achieve the two latter specifications it would make his life somewhat easier. Fortunately, most of Bond's opponents speak English, and I think he and the production team quite enjoy smashing up the odd expensive car.

Ultimately, I prefer the smidgen of realism in James Bond films in comparison to the Doctor Who series, it's only a mini-smidgen, mind you. However, when it comes to the gadgets, it's hard to beat the imaginative and zany concepts created by the Doctor. Who doesn't want a TARDIS in their back garden, fired up and ready to zip you off to another dimension? Mine would take me back to 2007, when we spent money that we didn't have on luxuries we didn't need.

Going Virtual to Improve Server Efficiency

Graham Jarvis explores server virtualisation - one of the most promising areas of growth in the IT industry.

What is virtualisation?

Server virtualisation is essentially about improving server resource allocation and management, making it more efficient by reducing the number of servers needed and making sure their optimal processing power is fully utilised. The term describes the ability to host complete operating system 'images' (including or excluding a kernel on a single hardware platform - typically creating a Virtual Private Server (VPS) or a Virtual Dedicated Server (VDS).

Trigence's online glossary of terms explains: "The way that the operating system (OS) interacts with the hardware platform is modified so that multiple OS instances can share the underlying hardware platform. Server virtualization is often used to consolidate multiple smaller (or older) servers onto a single, large server, without changing how the applications or OS is managed."
Server virtualisation is typically used for the following (in order of perceived importance):

1. Server consolidation (reducing the number of servers required to manage the IT infrastructure);
2. Disaster recovery (DR - back-ups and business continuity solutions to maximise server uptime);
3. Test and development (for testing software applications and so forth);
4. Mission critical activities;
5. Utility computing;
6. Complete IT overhauls.

So is server virtualisation new?

Sun Microsystems' Laurence James, Data Centre Efficiency Marketing Manager, says that the hypervisor has been around for "Donkey's years". Contrary to most people's impressions it has been around since the 1960s when it was first developed, and IBM came out with the first one in the 1970s. VMWare - which is typically thought of as being the original force behind the beginnings of server virtualisation - took the concept a step further to become the market leader.

To begin with the firm layered it onto an Intel X86 platform, but the process platforms' instruction sets "didn't lend themselves to virtualisation until specific processors were introduced to ensure the maintenance of integrity", he says. VMWare was essentially the company to develop the market, to get us talking about virtualisation today in all of its various flavours (e.g. desktop, storage, and operating system). As the first key entrant into the market

it managed to do what others hadn't quite achieved by solving these initial issues.

Eventually new players like Citrix, Virtual Iron and others joined them. In fact the market is continuing to grow and Fredrik Sjostedt, VMWare's Director of EMEA Product Marketing, says that it is now worth $1bn in Europe. The firm's server virtualisation solutions are used by about 90% of the FTSE 100 and FTSE Global 100 companies. It very much dominates the market, and it is expected to maintain its market position in spite of increased competition from the likes of Microsoft. We'll take a closer look at the market later on in this article.

"Server virtualisation has probably never been more relevant with a history that goes back to the days of the IBM mainframes", says Neil Sanderson, Microsoft, UK Product Manager for Virtualisation and Management Technology who adds that it is " Currently hitting mass adoption when organisations are more challenged than they have ever been."

What kind of companies use it?

All kinds of organisations can deploy server virtualisation today; either managing it in-house or through outsourcing it to an external data centre, and it is now available to even SMEs and large enterprises. There are an array of options, and some may be more applicable to large companies and others to the smaller ones. For example, small or medium-sized companies are often unable to afford to buy the necessary in-house skills and know-how to manage virtualised IT infrastructures.

So in this case it would make sense to hire an expert; a company that offers secure data centre services. They can then gain some peace of mind, knowing that their IT will be constantly managed, monitored and maintained by

professionals with all of the required competencies, knowledge and experience required to keep them in business. In turn they are able to focus on their own core commercial competencies. But how do they gain access to their own software applications? One option would be to use the software-as-a-server (SaaS) model, whereby a connection is created to the data centre using a virtual private network (VPN).

In contrast larger medium-sized and enterprise class organisations may elect to use a hybrid model. What does that mean? It means that they might want to have some aspects of their IT, like server virtualisation, managed by and outsourced to a data centre while keeping a certain amount of it in-house. These are challenging times, particularly as many projects are being put on hold, and IT managers have to increasingly justify their IT expenditure.

Why invest in server virtualisation?

Fredrik Sjostedt explains: "We have found that 70% of an organisation's IT budget is used to maintain your current operation. So you will have less for new initiatives, but if you can improve the amount of budget available, say through server virtualisation, you have more new initiatives. So that's key area for IT managers to contend with, especially when you are operating in a challenging market."

"Organisations have been buying an increasing number of servers within the data centre and there has been a significant increase in the amount of computing power within each one, but only about 15-20% of capacity is traditionally utilised", says Sjostedt. It also costs money to run large data centres, but this can be rationalised with server virtualisation. What do I mean? Well server consolidation is one of the key drivers for investing in this technology. As an organisation you can reduce the number of machines you run to manage your IT infrastructure. You might have 15 physical servers for example, but by virtualising them you'll only need one. So organisations can save money; the virtualised servers can make the whole thing more efficient

while optimising computing capacity per machine. Virtual machines can be deployed rapidly too.

With increased fuel and energy costs having an impact on most organisations today, and concerns about the environment, you can economise further too. How? By having fewer servers within the data centre, for example, you will use less power to keep them running and that in turn is as good for the environment as it is for your companies purse and image. "The cost of managing the IT infrastructure is being pushed into the data centre", comments Laurence James. Therefore many companies are on what he calls the 'data centre consolidation trail', aiming to increase cost-efficiencies by doing more with less hardware.

Reducing computing hardware

Sun Microsystems has been practising what it preaches, and passes this on to its customers. The company has gone down the server consolidation route, reducing 3,000 square feet of computing hardware down to just five racks. That's a massive 80% reduction! In terms of power usage this means they are using 50% less power to keep the data centre running than there were previously. The company is part of the Green Grid Consortium, which has developed Power Effectiveness Figure to establish a benchmark. The industry standard is apparently 2.5:1 servers, but Sun has managed to reduce its power usage to just 1.8:1 servers. On each server you can have 250 operating system 'images' on one server. All of this is great but James stresses that the successful implementation of server virtualisation requires cultural change. If you're considering it your IT team might also need to adopt new skills.

Firms are often virtualising at a point where a 'server refresh' comes up, and server virtualisation's cost effectiveness and the clear return on investment (ROI) derived from it provide them with the perfect excuse to get rid of any old hardware. The savings come in the form of reduce operational and capital expenditure benefits. VMWare believes you can gain back your initial investment within a six to nine month period. The

lifetime operating costs are much less than when related to the ongoing operation of traditional hardware, while also giving organisations the ability to become more and more agile and maintaining high levels of server uptime. The second most important driver is disaster recovery. Businesses are increasingly reliant on IT to run their organisations, and without access to their data they might not be able to operate. Effectively data and processes must be protected to ensure business continuity. It is important to have processes in place, no matter how your staff are working - whether mobile or from a desktop - to ensure their data is protected as much as possible. It becomes even more crucial within a virtualised environment, where the data is consolidated onto fewer machines. However, there are some very good tools available on the market for automating back-ups and reducing the amount of maintenance downtime.

Quick Migration

VMWare's vMotion allows IT teams to move data from one virtual machine to another, and without causing any disruption to service. Microsoft has a similar tool, called Quick Migration. They remove what is called the 'the single point of failure', ensuring that an organisation's staff can keep working without even realising what's happening in the IT back office. Tools like these save time. Let's take vMotion as an example. There is no need to shut down a server in order to carry out any maintenance of any kind. You just simply move the data over from one server to another one.

Server virtualisation allows you to mix and match hardware within a virtualised infrastructure. So you can use any of the server virtualisation vendors' solutions within your company. In spite of their competitive positions, many vendors are now working with each other. This should increase the interoperability; and match-making possibilities of each system, but some software applications work better than others when it comes to server virtualisation.

What do you need to spend?

"Let's say you're looking at a straight replacement of 10 servers with Direct Attached Storage. Depending on the vendor and model you could expect to pay £1500-£5000 per server giving you a total server cost of £15-50K.

If you look at deploying a virtualized solution instead, you might only have to purchase 4 servers bringing the hardware cost down to £6-20K. Then you'd need the virtualisation software. Starting with ESXi that is delivered for free on a wide range of servers from the likes of Dell, HP and IBM. What you do need is the ability to manage your Virtual Infrastructure.

Depending on the management capabilities you need, that will cost an average of £1500-£2000 per server. The total cost here would be roughly half that of a full physical environment. "

Source: Frederik Sjostedt, Director of EMEA Product Marketing.

For this reason it is essential for companies to review their business processes and test this technology before putting into production. Particular vendors' technologies may suit one organisation better than the others do, and if you don't have the know-how it might be worth thinking about working in partnership with one of the vendors, an independent consultancy or one of their partners.

Upwardly mobile

There are a range of different predictions about how the market is going to grow, but the outlook for the server virtualisation market is promising. The very fact that server virtualisation can save organisations much needed finance during the current 'recession' or 'downturn' makes it one of the areas where spending on IT could continue to increase.

Sales cycles (the period it takes to complete a sale) have dropped from the average of six months - depending on the size and type of the project - to 3-4 months within the sales channel during the last financial quarter of 2008. Jason Evans - CEO of Response Data Communications - describes it as though

people were asleep, and are perhaps just waking up to the benefits of server virtualisation as they become more aware of what it can do for their organisations.

VMWare expects the market to grow by at least 35-40%. The company reports 42% year-on-year growth, with the EMEA region growing by 48%. The US is a bigger market than EMEA, but the European market is accelerating. Yet to due redundancies the skills required to implement server virtualisation projects are still lacking (which means that some complicated projects take 18 months to implement). Furthermore, sales cycles can be affected by the fact that 'server refreshes' usually occur every 3 years on average.

"The market for server virtualisation should grow by up to 45% in the next 12 months", says Neil Sanderson who adds, "…that's the percentage of servers that will be virtualised. Server virtualisation is becoming part of the IT infrastructure, and not a separate technology." With this in mind James thinks that the open source sector will achieve 60% growth over the next five years. However, others such as Evans predict much higher growth - ranging up to 200% for server virtualisation and up 60% for storage and desktop virtualisation.

Multiple server sites

Peter Davis, CEO of JAD Logic cautiously explains his forecast: "I think we will see on multiple server sites 80% of them using virtualisation. We might even see 90% of them, and it will be inevitable. It's interesting isn't it? What we have seen is a huge swing towards notebooks. We are seeing virtualised desktops; the type of devices we will use are going to be converged. The mobile phone is going to be a huge driver as is VOIP technology."

In general organisations have to become more astute about what they spend and how they do things in 2009, which is very much seen as a year where people have to focus on survival. Server virtualisation can help them to achieve this aim and more - to become more competitive than their rivals. But some might want to wait, SMEs in particular, to see how the technology plays out in the large organisations, and make decisions based on tried and tested technologies. That's where VMWare will continue to win, but Microsoft's Hyper-V - which comes free with release 2 of Windows Server 2008 - might still be the preferred option for smaller firms. Larger firms might also opt for it, but they would no doubt seek the increased functionality of the enterprise version. All of the players, including VMWare, offer a similar free option though.

In fact Microsoft's entry into the market is going to increase competition. Broadly speaking this is welcomed, and even by VMWare, as it will shake-up pricing and give customers more choice. VMWare's market share might fall slightly, but it isn't worried about this. At the moment those who know about the firm like the brand name and what it stands for, but they don't like it's pricing - which is significantly higher than the cost of the alternative solutions offered by Microsoft, Virtual Iron and Citrix. "Customers will be where the freeware reigns", says Davis while adding that there will be increased interest in the "fringe players, providing more choice."

Microsoft's entry

What Microsoft's entry does most is to raise awareness of server virtualisation. However, the stability of Microsoft's Hyper-V is questioned by many people within the market. As regards the criticisms of Hyper-V, Sanderson says: "Customers will make their own decision, but what we are offering is very attractive. I am not aware of any issues around stability at all, but Hyper-V wasn't released as early as many people would have liked and the evidence is that it is very stable. From an architecture perspective, device drivers are not part of it and we maximise stability by having made it part of the server operating system." In spite of the criticisms levelled against Hyper-V, Microsoft represents the main threat to VMWare's dominance - for one there's the power of the better-known Microsoft brand. VMWare is generally not so well known as a household name. Microsoft's licensing arrangements are becoming friendlier to server virtualisation too.

With Microsoft teaming up with other vendors like RedHat, although VMWare and Microsoft also have a relationship, competition is going to become more fierce, though the general consensus is that there is room for more market players.

With a shift towards offering freeware, companies like JAD Logic and the vendors themselves will become increasingly dependent on making money by offering value-added services. Peter Davis explains: "I would imagine that we will see 65% of our revenues will come from highly specialised services. The hardware will become cheaper and cheaper, and so it gets to a point where there is no margin to be made…business opportunities will come from customers who take complicated products, hiring the likes of us to make them work."

Head in the Clouds?

Cloud computing is a strange term, but it's an important development in the IT market. The cloud is going to deliver the IT infrastructure needed for virtualisation projects, whether they be server, storage or desktop, believes Jason Evans. He describes cloud computing as "a phenomenal idea, but everybody including the dog are claiming to deliver it, and there are many definitions of what it means which is causing confusion."
Peter Davis asks: "Does the growth of cloud computing hinder or put forward server virtualisation?" He doesn't think that it will have an impact on server virtualisation, but what is very clear is that the market for virtualisation technologies will continue to grow at a double digit rate as many more companies become aware of its significant benefits. Competition? The battle has just begun, but it would take a really hard knock to push VMWare off its market-leading perch in the server virtualisation market. On the whole the technology's future is promising.

Further reading
1. 'Red Hat, Microsoft Set Differences Aside to Compete with VMWare'
http://www.informationweek.com/news/software/server_virtualization/showArticle.jhtml?articleID=214502216

2. Citrix to release XenServer for Free
http://blog.dataplex-systems.com/2009/02/citrix-to-release-xenserver-for-free.html

3. Speculation stirs on Cisco-VMware alliance
http://www.marketwatch.com/news/story/analyst-says-cisco-may-teaming/story.aspx?guid=%7B5FC2763E-708D-4697-9A8A-213931B62422%7D&dist=msr_1

4. A successful virtualisation strategy needs strong discipline
http://www.computerweekly.com/Articles/2009/02/19/234915/a-succesful-virtualisation-strategy-needs-strong-discipline.htm

5. Dell Server Virtualisation Improves IT Performance and Public Service Delivery at Luton Borough Council
http://www.finchannel.com/index.php?option=com_content&task=view&id=30247&Itemid=10

The Mobile Mismatch:
Power Without Protection?

Prof. Steven Furnell
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The last couple of years have seen a great deal of media attention towards data loss by organisations, who have been deservedly criticised for mistakes such as losing laptops and sending unprotected data through the post. However, what has been less readily recognized is that thousands of us are routinely exposing data to similar risks on a daily basis, by virtue of what we are carrying around on mobile devices such as phones and PDAs. The difference is that the responsibility here (and thus the blame if it goes wrong) often rests with individuals rather than employers, and the data that risks exposure is personal as well as professional.

If we think about today's typical mobile phone, we now have a device that does far more than those we carried around five years ago. To prove the point, let's consider a few characteristics of a current device:

- it does far more, giving access to a wider range of inbuilt applications and online services.
- it's far more connected, with the ability to join cellular networks, wireless LANs, and personal area networks via Bluetooth.

- it stores lots more data, with many megabytes of internal memory and the ability to store several gigabytes via storage cards.

Protection

The resulting devices, currently epitomized by devices such as Apple's iPhone, would consequently be able to give many desktop PCs a run for their money in terms of the processing and productivity they can offer. So, if you're making comprehensive use of the device, what might it be storing: your contacts, mail, text messages, documents, photos? And what about the services that you can get to from it: online banking, your social networks, online stores? It's increasingly likely that the answer to many of these will be 'yes', and so it starts to become clear that we're carrying something that needs some protection. And yet more justification comes from the business-related data that may also be held. For example:

- according to 2005 findings from Gartner, over 80% of new and critical data is now stored on mobile devices .

- findings from Pointsec in the same year suggested that 56% of IT professionals used their mobile devices to store corporate information, while only 22% claimed to use protection such as passwords or encryption .

Moreover, these are trends that are only likely to continue. Indeed, from a UK perspective, we can observe that the stated Government goal in the longer term is to enable "any content…over any network…on any handset…anywhere" ; which clearly has implications for the sensitivity of the associated mobile devices.

Analysing Risk

Having illustrated that there is something in need of protection, we can add some evidence of increased risk. While some may consider that carrying the device around with them means that it is safer than one they routinely leave unattended at home or at work, there are clear indications that mobile devices are easily lost and attractive to thieves:

- according to the British Transport Police, phone theft accounts for 45% of overall theft on London Underground ;

- a survey of 100 law firms conducted by Credant Technologies revealed that 24% had misplaced at least one mobile device containing confidential documents such as client details, case notes and contracts ;

- on average companies admit to losing 5% of their mobile devices per year .

Another extremely relevant factor is that loss is very likely to occur in public places. As an example, further findings from Pointsec suggested that in the six months leading up to November 2006, almost 55,000 phones and 5,000 PDAs were left behind in London taxis (as well as over 3,000 laptops and almost 1,000 memory sticks) .

Having established that sensitive data can find its way into vulnerable locations, the final important realization is that it often does so with less protection than it would normally receive. For example, if you've ever downloaded a document to your mobile device, think about the degree to which it's protected compared to what it would have received on your desktop PC. For example, your desktop system, at home or at work, is

very likely to be located within a physically protected environment. If the document is sitting on a workplace PC, then it's likely to be on a protected network and have at least password protection for local access. Now think of the same data on the mobile device; if it's protected by anything at all, it's now likely to be a PIN code. So, four digits versus a more lengthy alphanumeric string. Moreover, the use of PINs on mobile devices is often somewhat dubious, as evidenced by the following findings (taken from a survey of almost 300 mobile phone users) :

- 34% did not use a PIN to protect their phone at all;

- 45% had retained the default PIN (thus rendering the device vulnerable to anyone prepared to search for an online copy of the manual);

- only 25% claimed to be confident in the level of protection that a PIN would provide.

Research

To explore the problems further, we conducted some later research using focus groups, which enabled us to get more insight into why the protection was being under-utilised. Some indicative examples of the resultant comments were as follows :

- As a general user who is only using it for personal use, there's no data on there that I class that sensitive"

- I'm not sure that anybody would want to steal my information; I don't perceive myself to be that important"

- I always forget my PIN"

- I never turn my phone off so if I lost it, it would be on anyway"

These views are not entirely surprising, and are symptomatic of users' frequent disregard for their own protection. What was revealing was that as the focus group sessions progressed, and the discussions turned toward what was actually stored

on their devices, some users began to re-evaluate their need for protection (realizing that text messages, photos and schedules were not things that they'd want to see falling into the wrong hands). Meanwhile, others acknowledged that they would ultimately like to take advantage of emerging mobile services (e.g. m-commerce and banking), and would appreciate better security to support them in doing so.

Of course, some might argue that they're still not storing very much directly on the mobile, and that any online services still require further authentication. However, even here, the mobile device might engender different behaviour; because it's fiddly to enter the user IDs and passwords via the keypad or touchscreen, many users will opt to get the browser to remember their login details. Thus, the fact that the services require secondary authentication becomes redundant, because the user (be they the device owner or an impostor) is effectively pre-authenticated each time they access the site.

Balancing Act

The awkwardness of providing typed input is just one example of how the nature of the mobile device can affect the acceptability of security. Another is the way in which we typically use the devices; taking them in and out of our pockets for short bursts rather than sitting for a sustained period. Introduce any security procedure that takes more than a few seconds and it is perfectly conceivable that the user could end up spending more time getting past that than performing the task they actually wanted to do. The mobile context therefore introduces a balancing act between security and usability that is felt even more acutely than on the desktop. Moreover, if you get to the detail of the issue, there are certainly some limits to how much security can actually be used on a mobile device anyway - often because features that we're used to on the desktop are no longer available . For example, use Microsoft Word on the desktop and you can password protect a document. However, if you want to access that document on the move then you have to remove the password protection before Word Mobile can open it.

Service Utillisation

Fingerprint Recognition

Facial Recognition

Signature Recognition

Keystroke Dynamics

Voice Verification

A further factor, typified by techniques such as the PIN, is that we tend to regard authentication as a black and white judgment, regardless of what the user is trying to access (i.e. once I've authenticated myself on the device, I've equal access to all the data it holds), or tend to leave any supplementary authentication to whatever service is being accessed. Given that we know that some things are more sensitive than others, a more appropriate model might be to have some sort of sliding scale, whereby more important data and services require the user to have demonstrated their identity more strongly. This would, of course, represent quite a fundamental shift, with a much more upfront recognition and acceptance of security on the part of the user (i.e. registering a profile and assigning protection requirements to different applications and data).

Additional security

How do we improve the situation? In the aforementioned survey, 85% of respondents claimed that they would actually welcome additional security on their devices. The question is therefore how to provide it without introducing the characteristics that they clearly found undesirable with the PIN. As some readers may be aware, some devices are already available

that go beyond PINs and passwords to provide a more robust authentication via fingerprint sensors. However, relative to the variety of different handsets available on the market, fingerprint authentication is included on only a very small subset. As such, the feature typically appeals only to those users that are willing to pay an additional premium for their protection. However, from a hardware perspective, many devices already incorporate several other aspects that could conceivably be leveraged for improved security. This concept is illustrated in Figure 1, which depicts a device and the biometrics that it could potentially support via its standard hardware (and although the device depicted here is currently a rather high-end model, the capabilities are likely to become increasingly standard).

While this approach to authentication is clearly ambitious when compared to that found on current devices, the feasibility has been demonstrated in research labs. Indeed, research conducted at the University of Plymouth (with support from the Eduserv Foundation) has resulted in an operational prototype that enables a range of biometric measures to be captured during a user's natural interactions with a mobile device . One of the resultant advantages is that

greater security can be incorporated, without introducing an explicit overhead from the user's perspective. Another is that the system permits a level of flexibility; authentication no longer needs to be restricted to point of entry, and it becomes feasible to consider things in terms of the aforementioned sliding scale (i.e. the confidence in authenticating the user can become a factor of what biometric can be measured and what task they are trying to perform). This does not mean that the use of secret knowledge techniques would entirely disappear, but they could be held in reserve and used in explicit challenge scenarios, when non-intrusive authentication approaches have already raised a level of suspicion about the legitimacy of the user.

Prototype

While a working prototype has been developed and trialed, the system is still essentially a research concept, and we are some way from transparent authentication being able to be deployed in a sufficiently reliable and convenient manner (thus providing further evidence that the evolution of IT services tends to occur more rapidly than the technologies that are able to protect them). In the meantime, the onus is therefore upon users to make

the best of what is currently available, in order to ensure that their devices (and more particularly their data) have at least some level of protection. It may not be perfect, but it's certainly better than nothing.

At the end of the day, the volume of people using mobile devices for anything beyond voice and text services is still relatively small (at least when compared to those storing data and accessing online services from a desktop). As such, it is possible that many readers will still conclude that the concerns raised here don't actually apply to them, because they're not using their mobile devices for any of the things that have been discussed. However, this is likely to change as time goes on. In the future, ubiquitous data access will be the norm, and unless you're storing it in the Cloud, a mobile device will be the most likely means of keeping it accessible regardless of where you go. As such, many users still have a chance to get into mobile security mindset and make it part of their behaviour from the outset, rather than playing catch-up as most have done on the desktop for the last few years.

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STYLE COUNCIL: GADGETS

iPhone's cute pal

By Muhammad Ajmal

iPhones have inspired many attractive peripheral gadgets, but perhaps none quite as cute as this. It looks like a miniature iPhone with sleepy eyes and red lips but in fact, it's a removable USB flash drive. Whether you use it for an iPhone or your computer, this is an amusing little sidekick. It can stand or lie down to rest depending on how it, or rather you, are feeling. The basic dimension is around 21 x 42 x 11 mm and weight 10g.

More information at:
www.walyou.com

BLACKBERRY PICKING

By Nidhi Nahal

This gadget is targeted at the executives and entrepreneurs and is another addition to the blackberry family. Previous models have seen a high rate of success but this model is the first of its kind, as it has a TOUCHSCREEN. It's a must have for people who are continuously on the move, can't afford to miss out on information and need to keep a track of their work. The touch screen allows easy access to all its features ensuring that one does not miss out on these priority mails or messages.

It is a very well organized phone which generated a lot of excitement before its launch. Police had to be called to control the angry customers as it was sold out on the first day of its market release. The device allows "push" email from servers, a media player and a built-in camera. It provides fast and reliable network coverage as it has been built carefully keeping in mind the need for speed & endurance. The touchscreen navigation sets it apart from its predecessors.

More information at :
*www.blackberry.com/
blackberrystorm*

Napkin PC

By Nidhi Nahal

The Napkin PC is due for release in late 2009 and price is not known yet but it certainly is an interesting combination of human brain and technology. It has a touch screen interface that allows multiple users to brainstorm their ideas on one small napkin. It uses E-Paper and does not need power to retain an image; instead it uses a single layer of flexible circuit board that uses inductive power. You can play noughts and crosses, carrying it anywhere. It will be available in two versions personal & portable. The selling point of this device is that it allows users to share their ideas with greater ease.

HOW IT WORKS

Data is sent to the multitouch e-paper napkin interface via the pen using short range radio frequency (RF). The pen and napkin also communicate with the base station PC via long-range RF.

The device eliminates the need to print as it retains the image, thereby saving paper and energy, making it an environmentally-friendly gadget.

It is a fuss free device that does not require you to carry a charger or any sort of baggage as it easily rolls into an even smaller size.

It is a simple, inexpensive option that performs all its functions wirelessly and provides seamless performance.

Photo show on a keyring

The Ciruss Digital Photo Keyring

By Ayeshe Reshat

When you're standing around waiting for a bus or in one of those interminable checkout queues treat yourself to a photo show of your nearest and dearest. Ciruss Digital have come up with a neat portable gift, a 1.5 inch Digital Photo Keyring with 2MB of memory which holds up to 138 photos.

The silver keyring is easy to use anywhere as software is built in and loads up when you connect the frame, making it simple to load your photos. It is rechargeable via any USB port and the 3.7 volt lithium battery will keep the digital photo keyring running for up to 8 hours. As a package, the Digital Photo Keyring is ideal for multi-functional use, and comes complete with both a fabric necklace as shown in the picture and also a keyring, making it easy to attach to your car or house keys.

The Cirrus Digital Photo Keyring, comes with a 1-year guarantee with a UK based helpline operating 7 days a week via email. Whether you want to install pictures of your newborn baby or your beloved pet, this is a perfect gift for keeping your loved ones close wherever they are.

More information at : *www.cirrusdigital.co.uk*

The Mini is dead, Long live the new Mini

SONY VAIO P-SERIES
By Kelvin Jones

The days of oversized laptop bags are over. The VAIO P-series is making waves in the technological world. Partly because it's stuffed full of Sony's latest gadgetry, and partly because its sleek slim design could slip into a large overcoat pocket or handbag.

Sony are not just marketing this as the must have gadget for technology buffs who want everything smaller, but also the new must have for fashionistas.

If *Sex in the City* was still running Carrie Bradshaw would definitely be pulling one of these out of her Gucci handbag.

When you first look at the P-series, it looks like a large metal artists pencil case, which would appeal to at least a percentage of the customers. I like it a lot simply because it's everything you want in an ultra small package.

When you turn it on its appeal to the hip and trendy really kicks in, with the option of Windows Vista or the XMB "XcrossMediaBar" function. For those of you not in the know, the XMB system is currently used by Sony's Playstation 3, Playstation Portable and the latest Bravia TVs. A simple (horizontal & vertical) interface allows quick access to various elements of the system. You can access the internet instant message and playback music without even accessing Vista. With such a small package you'll be surprised that they've still packed in 2GB's of RAM and made the case surprisingly tough.

The screen is 8-inches with an energy efficient LED backlight to extend the battery life. Even the resolution surprised me at 1600 x 768 web browsing is simple and with the wide viewing field you can easily place two web pages side by side. A nifty little button at the front of the unit automatically and equally distributes any open windows equally across the screen.

In using the keyboard it's pleasantly spaced without cramming which makes for comfortable typing. The GPS facility means that whilst commuting you can find somewhere to stop off and eat on the way home.

Overall the P-series hasn't got anything that other Sony laptops don't have. Its all in the detail; it sets itself apart with the dual booting for simple access and its sleek and streamlined styling adds to the appeal. It's packed everything you'd expect from a larger portable range into a micro casing and hasn't scrimped on being user friendly.

Dance to a different rhythm

Jolly Sony Rolly
by Manpreet Kaur

The Rolly Sound Entertainment Player lets you experience your music at a new level. It fuses sound and motion, spinning and twisting to the beats, with multicolored lights flashing in time.

Rolly is a new dimension in MP3 players that brings you closer to your music. It shakes and twists to your chosen tracks. It responds to the beat with funky moves and shows crazy light. When darkness falls, it gives an even more spectacular light performance.

Rolly choreography software can analyze all the music it plays and create motion sequences to match. It's not all work. You can just upload your favorite track and watch Rolly™ perform. At the click of a button it will improvise and take over the dancing. All you have to do is sit back and watch.

More information at :
http://www.sony.co.uk/hub/rolly-dancing-mp3-player

TRAVEL 3D STYLE

By Nidhi Nahal

This year has taken off in 3D style Mapping, with the launch of various 3D navigation systems. So no more old paper maps, heavy books that you need to change because there have been new additions, though it's not real 3D but a 2D simulation.

Now we have navigation systems that not only tell us directions but show us realistic pictures of which direction we are heading in and how our destination looks. Earlier we could just sample maps on Google map but even on that we will soon be able to use 3D mapping.

More information at www.clarion.com

Features :

It is a much more clarified system that highlights what the driver needs to know instantly.

The main features of this system are that Map Buildings, Landmarks and Elevation changes are shown in simulated 3D.

The buildings close to the driver are shown in a see-through format to avoid confusion and avoid blocking the view of the next junction.

The buildings far away are in a solid format making it easier to differentiate and at the same time working as reference points.

It also has a lane information system in which it highlights the lane that is needed or is being used; it helps to keep things clearer for the driver.

There is inbuilt Bluetooth that enables it to display text messages and music playback can also be used with to the inbuilt music player.

Talking and Shuffling iPod

By Jason Stone

Now there's a talking iPod doing the shuffle!

Always at the cutting edge, Apple has launched its latest "must have" for the iPod generation. This third-generation iPod shuffle is the talk of the music world. Not only because it's really small-half the size of the previous generation, or because it can hold up to 1,000 songs and supports multiple playlists. It's the talk of the town because it's the only music player in the world that talks to you! The new VoiceOver feature lets iPod shuffle tell you what song is playing and who's performing it. It also tells you the names of your playlists. With VoiceOver--and with the controls conveniently located on the earbud cord--it's even easier to navigate your music. You can do it without taking your eyes off your run, your ride, or whatever else you may be doing.

The new iPod Shuffle VoiceOver feature, gives the iPod the ability to "speak" song titles, artists' names and playlist names. The device can "speak" in 14 languages, including English, Czech, Dutch, French, German, Greek, Italian, Japanese, Mandarin Chinese, Polish, Portuguese, Spanish, Swedish and Turkish.

This tiny iPod has no playback controls on the player itself. Instead, the buttons of the device are positioned on the headphone wire. Those buttons allow the user to play, pause, adjust the volume, open or switch playlists and hear the name of the played song or singer. The iPod Shuffle can also give information about the battery status (how much battery life remains).

The third generation of its low-end iPod Shuffle is also significantly smaller than an AA battery .

The new iPod Shuffle comes in black or silver. It has a thin, ultra-modern design and a stainless steel clip on the back. The device costs around $79 online.

Leadership in Times of Crises

A seminar at the British Institute of Technology & E-commerce

The former Malaysian Prime Minster, Tun Dr Mahathir Bin Mohamad gave the keynote speech at a seminar at the British Institute of Technology & E-Commerce (BITE), "Leadership in Times of Crisis." His title was, "Combating the Currency Crisis of 1997-1998 in the Light of Today's Global Financial Crisis".

Since the current crisis, many have compared the 1997-1998 crisis with it. But that crisis was not due to the systemic collapse of the monetary and financial system that we are seeing now it was due to the deliberate manipulation of the currencies of east-asian countries which the financial system permitted.

Today what we are seeing is the collapse of the financial and monetary systems due to abuses being so rampant that the system just cannot sustain it any longer. Currency trading was legitimate, speculators could take a bet on the possibility of the market going up or down. There was an element of chance. The speculators initially bet on the basis of their knowledge of the likely trend. If their forecast was wrong then they would lose their bet.

Big funds step in

But then the big funds moved in. Their bets were so big that they could actually influence the market to move up or down. If they buy repeatedly the currency would appreciate and if they sell the currency would depreciate. Knowing that they had actually gained control of market movements, they were able to eliminate the element of uncertainty in their speculation, they could theoretically make certain that their investment would always be profitable.

Central banks may try to counter the

traders by buying up the currencies the traders were selling, thus stopping the depreciation. The central banks can also sell if the currency appreciates, but the funds were so enormous that central banks would lose all their reserves and still be unable to stop the depreciation or appreciation.

In 1997-1998 the traders decided that the east Asian countries were ripe for them to manipulate their currencies, and make a pile for themselves. It did not matter whether the countries were financially in good shape or not. Simply by selling enormous amounts of the currencies of the countries concerned, they were able to destabilise the finances of these countries. The central banks did try to counter but very quickly they realised that the funds were so big that they could continue selling or buying, i.e. devalue or revalue until the central

banks had exhausted their reserves, and had to back off. Then the currency traders could do what they liked without the countries concerned being able to do anything and the end result could be the country will be reduced to penury.

Bankruptcies

The impoverishment of the country will be manifested by the bankruptcies of banks and businesses, unemployment, riots and demonstrations. Thus, a country that was sound financially and economically would find itself unable to pay its foreign debts and had to seek IMF or World Bank loans, after the traders hit it.

I am sure you all know about all this but I feel I need to repeat the story.

I will not talk about what happened when the IMF moved in. Suffice for me to say that things did not get any better in fact, things got very much worse.

Basically currency trading is made possible by the international financial and monetary systems which we all accept. This is made worse by the idea of the free market i.e. the market that should be free of government control. The market is supposed to regulate

itself. But self-regulation is a dream. It has never worked.

Long ago when the Bretton Woods meeting decided on the international financial and monetary systems, world trade and trade generally were relatively small. There were not many funds available. So no company was big enough to dominate the market.

When Rockefeller tried to monopolise the oil business, the US government passed the Anti-Trust Laws and he was forced to break up his business, at least on the surface. Things were running quite smoothly when the US dollar was fixed against gold and currencies were fixed against US dollars. Then the US went off the gold standard there simply wasn't enough gold to back the currency. The value of the US dollar was to be determined by the market.

Exchange Rates

There were no really big funds which could manipulate the value of the US dollar. For a time the market did determine the exchange rates of national currencies. But once it was realized that the market could be influenced by large purchases or sales of the currencies themselves, the smart financiers began to think up schemes for making money with the power of the big funds.

The initial problem was raising sufficiently big funds. Individuals acting alone just cannot accumulate sufficient funds. Besides, individuals would not dare to risk their money trying to influence the market. Nor can individuals borrow sufficient amounts to invest in the markets. And so for a long time the financial and monetary systems seemed to work.

Then came the pension funds with huge funds seeking to invest. Very quickly they found that when they started investing the share market would shoot up. When capital gains were sufficiently high they could dump the shares and collect huge profits.

The share market would plunge and small investors would lose money. But

that was not the concern of the pension funds. The ability of the huge pension funds to influence the market and yield huge returns attracted the attention of smart financiers. Taking advantage of the practice of banks to lend far beyond the value of their assets, they set up hedge funds for investments by the rich.

Bank Lending

To increase the size of their funds they persuaded banks to lend them 20 times the investment capital they had built up. Now they would have sufficient funds to influence the market. Effectively the investors had acquired 20 times their investment capital. Even after interest payments, services and management fees and the profit taken by the fund managers, the return on twenty times their original investments would be very substantial.

Over time there were more hedge funds and more people with more money to invest.

Soon the hedge funds were actually handling trillions of dollars. Many were the people who became very rich through investments in these funds; the countries too, appeared to be rich.

But once in a while, the fund managers would make a bad investment. Then the loss would be so huge that they would drag down the banks with them. The classic case is with Long Term Credit Management. Its investments were so big that its collapse would drag down other banks and precipitate a financial crisis in the US. But their investors were powerful and could pull strings. So a bail-out was arranged basically by the government.

In the present system the banks were allowed to lend more money than they had. It should be 10 times more but who is to check the actual amount. In other words the banks had been given the power to create money. For the banks, the bigger the loans they give out, the more money they will make.

Banking prudence should ensure that the loans were sound but if the loans can be secured with insurance companies or mortgage companies, why bother to be too prudent.

And so the banks lent to high risk borrowers as well, more and more of them again, if the amounts are small the danger is minimal. But when the loans began to reach billions of dollars, should the loans fail to perform than the losses would be huge. Soon, although the loans were secured by insurance, the insurance companies and the other secondary mortgage companies would be unable to reimburse the banks.

Thus the sub-prime crisis.
The real problem is the rights given to banks to lend money which they don't have.

In small amounts this practice can be handled. But when huge amounts of non-existent money were lent than the failure to perform would become such a huge burden that the banks must fail. The cover-ups just cannot be effective. The banks must admit their losses. Since they waited so long before revealing their losses, their burden would be so big that it would pull them down completely.

Enron

Covering up was also one of the causes. We know that in the case of Enron and world.com the accountants did a lot of creative accounting which hid the losses. But when the losses reached very high levels there was no way for the accounting firms to hide the real situation.

Then there is the role of the rating agencies. They were owned by the banks and were required to rate naturally, but they showed a better performance than they actual did, in order to persuade investors and clients to respect the banks. Overspending through credit cards is another cause for the banking system to fail. Interest rates for credit cards is very high. All purchases are now through credit cards in place of cash overspending runs into billions of dollars. The credit card borrowers simply cannot pay their debts.

As you can see there are multiple causes for the current financial crisis, it is not just currency devaluation, as in 1997-1998. We were able to bail-out our banks and companies in 1997-1998 because the amounts were relatively small and more importantly, the business environment was still largely intact. The rescued companies and banks could continue doing business once we restructured the debts of the companies and recapitalized the banks.

A bail-out is essentially a loan. The money must be repaid. If the business environment enables the businesses to recover then the loans can be repaid.

But when the country is in recession, they will not be able to earn enough to repay the loans. The bailor will then become effectively the owner.

Nationalisation

Since it is the government which bailed out with government funds then the banks and businesses would effectively be nationalised. But nationalisation would not enable the businesses to recover when the economy is in recession, so bail-outs are really not the answer this time. We see governments furiously bailing out financial institutions and businesses, but we have yet to see any results. Now the us government is talking about 3 trillion US dollars. But it is doubtful there will be recovery.

There will come a time when the government will have to admit that the whole system has failed. Even reintroducing regulations will not cause the economy and the finances to recover. What is needed is a total write-off of the monies lost. That will mean accepting the need to reduce the lavish life-style that we have been used to.

That will mean reducing the per-capita income in the rich countries as well.

This is the difference between the 1997-1998 crisis and the current one. It was possible to reverse the effects of that financial crisis because it was not due to systemic failure. The system was still functioning in the countries affected and also in the rest of the world. But this time we are seeing world-wide systemic collapse.

The purchasing power of the whole world has been reduced. Businesses-all kinds of businesses must shrink. The GDP of all the countries of the world will shrink.

In other words we will all become poorer, even the rich people will become much less rich. The rich will have to sell their yachts and private planes, their holiday homes and their palatial homes. The poor will become poorer as the spending of the rich will not trickle down as much as before.

All these things are due to the abuses of the international monetary and financial system. If there is to be recovery, the systems will have to be changed. The world must accept this and everyone, rich and poor, must participate in formulating the system change. This will take time. In the meantime investing money to make money should be disallowed. All should go back to producing goods and services.

The profits to be made will not be as big as in the manipulation of money, but the wealth from these activities will be real and the economy will be more sound.

The main thrust of the BITE seminar was directed towards solutions to the current economic crisis, rather than dwelling too long on its causes. Some short, but effective, speeches by the other guest speakers exemplified this approach.
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Tarek El Diwany, author of *The Problem With Interest* (1997) and an

acknowledged expert in the field of Islamic finance, gave a talk entitled 'The Credit Crunch: An Islamic Perspective'. Mr El Diwany offered an historical perspective on the present credit crunch, showing that its roots lay in the very foundations of Britain's financial system in the late eighteenth century. Then, as now - or at least up until very recently the banks were allowed to openly trade in giving credit to businesses and reaping the rewards gained through charging favourable rates of interest and seizing the assets of those enterprises which unfortunately failed.

Of course, such a reckless strategy was not limited to this country. The very Constitution of the United States forbade the backing of government Treasury notes with anything other

than solid gold - until, of course, such a stricture became impractical. Within such circumstances of necessary governmental relaxation, banks started to exercise more power, issuing what were initially receipts for real money held safely in vaults as actual money in itself. Ultimately they started using money that they did not really possess to guarantee bad debts. Hence the disastrous affect on our own economy, brought about by adherence to a global policy of sharing around a mountain of debt that can never be repaid.

The effect of such misguided financial thinking is not always immediately apparent, but eventually builds up. Mr El Diwany gave the example of the Bluewater Shopping Centre just outside London, in Kent. Many of the shops (particularly clothing stores such as Dorothy Perkins and Top Shop) are owned by Sir Philip Green, who was provided with the money to buy out failing businesses by the banks. This has created a monopoly against which it is hard for other businesses to compete, thereby reducing any real possibility of a business-led recovery from economic recession.

The gradual standardisation of British high streets, whereby goods are almost exclusively sold by large chains of shops and supermarkets, is taking away the economic vibrancy from cities, towns and villages that were once defined by their individuality. Every place in Britain is starting to look the same as another. This especially applies to housing and Mr El Diwany gave an example of how his own home village had lost much of its character through the over-development of identikit homes that will remain mostly empty for the foreseeable future as people cannot afford to buy them.

It would seem that economic mismanagement requires a solution that is essentially moral, rather particularly religious or political. This was the message in the speech given

by **Mr Iqbal Khan**, the Chairman for the Al-Fazr Islamic Bank spoke on 'Time For Change'. He said the iniquities of the present banking system stem from basic human fallibility - in other words, the greed of both parties on either side of the counter - those who demand easy credit and those who give it without receiving much in the way of a guarantee that it will be paid back. This affects businesses which depend on credit to buy goods to sell and therefore make a profit, which in turn benefits the banks. Yet the short-sightedness of recent financial policy in shoring up assets against bad debts has led to many companies going out of business. The consequence of this is rising unemployment and an increasing burden upon an already overstretched state.

Mr Khan stressed that the biggest asset that companies have is their workforce. It is necessary for business to think in terms of investing in 'human capital', rather than in strategies for short-term gain and the knee-jerk response of 'letting people go' or 'downsizing'. In the end, this will be a tremendous advantage in overcoming economic problems that will surely not prove to be insurmountable. There was a pertinent quote at the end of Mr Khan's speech from Dr Martin Luther King: 'Through our scientific genius we have made this world a neighbourhood; now through our moral and spiritual development, we must make it a brotherhood'.

The Credit Crunch
G20 Global Recovery or More Debt?

Peter Robinson considers the G20 action plan to combat the credit crisis

The G20 group of finance ministers and central bank governors was established in 1999 to bring together industrialized and developing economies to discuss key issues in the global economy. With the global credit crunch in full sway, the G20 meeting in London in April and the new global strategy it presented inevitably attracted worldwide media attention.

The question is whether the new strategy is a practical solution to the present crisis. The G20 plan is based on the belief that growth, to be sustained, has to be shared and that the global plan for recovery must have at its heart the needs and jobs of families, not just in developed countries but in emerging markets and the poorest countries of the world. The G20 leaders believe that the only foundation for sustainable globalisation and rising prosperity is an open world economy based on market principles, effective regulation, and strong global institutions. But the question is: can world leaders of diverse economies work together on a common plan which they can actually implement when budgets are tight?

The agreements reached will treble resources available to the IMF to $750 billion, to support a new allocation of $250 billion, to support at least $100 billion of additional lending. This will ensure $250 billion of support for trade finance, and the use of additional resources from agreed IMF gold sales for concessional finance for the poorest countries. This constitutes a global plan for recovery on an unprecedented scale.

The Group is undertaking concerted fiscal expansion which they say will save or create millions of jobs which would otherwise have been destroyed, and that will, by the end of next year, amount to $5 trillion. It aims to raise output by 4 per cent, and accelerate the transition to a green economy. It is committed to deliver the scale of sustained fiscal effort necessary to restore growth. However, nobody knows to what extent this package will create a significant surge in employment or if it will just burden fragile economies with more debt they cannot service.

Central banks

The central banks have taken exceptional action. Interest rates have been cut aggressively. In the UK a base rate of 0.5 per cent is unprecedented yet so far it has done little to reenergise the property market or provide the loans businesses need. The banks which have assured government they will widen their lending are proving recalcitrant with mortgage lending which so far is only marginally up with only the relatively safest borrowers succeeding in getting a mortgage. Banks have pledged to maintain expansionary policies to meet the needs of businesses but to date the latter are still reporting difficulties in getting loans.

Major failures in the financial sector and in financial regulation and supervision were the fundamental causes of the crisis. The G20 meeting agreed that confidence will not be restored until trust is rebuilt into the financial system. But with the succession of reports of the bonuses bankers are still receiving even when their banks have been backed by government has left the public suspicious. The G20 group has promised to take action to build a stronger, more globally consistent, supervisory and regulatory framework for the future financial sector, which will support sustainable global growth and serve the needs of business and citizens. But the question the Prime Minister, Gordon Brown and other leaders have failed to answer is why in their long periods of office their regulatory systems were allowed to become so lax. Responsibility and the word "sorry" have been sadly lacking and the public have taken note of this. There is a distinct possibility that many of the leaders smiling for the cameras at the April summit will not be in office in a year or two.

The G20 group has stated "We agree to establish much greater consistency and systematic cooperation between countries, and the framework of internationally agreed high standards, that a global financial system requires." To this end it has implementing an Action Plan:

- to establish a new Financial Stability Board (FSB) with a strengthened mandate, as a successor to the Financial Stability Forum (FSF), including all G20 countries, FSF members, Spain, and the European Commission;

- the FSB should collaborate with the IMF to provide early warning of macroeconomic and financial risks and the actions needed to address them;

- to reshape regulatory systems so that authorities are able to identify and take account of macro-prudential risks;

- to extend regulation and oversight to all systemically important financial institutions, instruments and markets. This will include, for the first time, systemically important hedge funds;

The G20 group has instructed finance ministers to complete the implementation of these decisions in line with the timetable set out in the Action Plan and to provide a report to the next meeting of our Finance Ministers in Scotland in November. It is at that meeting that we will get a better sense of whether the Action Plan is empty rhetoric or a viable plan of action as its name suggests.

World trade

The G20 April meeting noted that world trade growth has underpinned rising prosperity for half a century. But it is now falling for the first time in 25 years. Falling demand is exacerbated by growing protectionist pressures and a withdrawal of trade credit. Reinvigorating world trade and investment is essential for restoring global growth. The group is determined not to repeat the historic mistakes of protectionism of previous eras. It has decided:

- to reaffirm the commitment made in Washington: to refrain from raising new barriers to investment or to trade in goods and services, imposing new export restrictions, or implementing World Trade Organisation (WTO) inconsistent measures to stimulate exports.

- to minimise any negative impact on trade and investment of domestic policy actions include fiscal policy and action in support of the financial sector. Not to retreat into financial protectionism, particularly measures that constrain worldwide capital flows, especially to developing countries;

- to ensure availability of at least $250 billion over the next two years to support trade finance through our export credit and investment agencies and through the MDBs.

If the G20 actions start producing tangible benefits, the plan could work and recreate a New Deal on a global scale but if the job creation plans do not work, inevitably there will be demands for greater protection and governments nearing election time tend to take notice of public opinion, even if it is against their better judgment.

Next Generation - ICT

By Dr Andy Phippen

"They're people who have lots of friends they've never met before."

Previously, I have commented upon young peoples' lack of awareness of the sector and the potential harm this might do for the future of the ICT workforce. In this article, I consider this in more detail, and consider how more joined up thinking might address the concerning impression one gets from working with young people and their perceptions of careers in ICT.

Even during this economic downturn, there is demand for ICT skills and knowledge. There have been many reports of enterprise turning to ICT for efficiency savings - to deliver business efficiency with less resource; to deliver on the promise and potential of ICT . Amidst the economic gloom, while there has been an inevitable drop in demand, ICT shows less of a drop than any other sector except Healthcare . SOCITM announced that public sector ICT is reporting a 5% increasing in budget this year (influenced in part to the continued pressure for local Government to become more efficient by delivering more public services online). eSkills UK, our sector skills council, predicted last year that in 2012 there would be 120,000 new job opportunities in the sector.

The next generation

However, when looking at the next generation, those currently at school, are we optimistic that these vacancies will be filled and that the sector can deliver for UK Plc.? Certainly from an awareness of ICT in their social world, we can be encouraged. There are few young people that do not use the web, social networking, instant messaging and mobile platforms. Indeed, when talking with young people about

knowledge and awareness of such technologies, they often report that they are far more informed about the digital world than anyone else in their families. This is certainly reflected by dialogue with parents, who are, in some cases quite rightly, concerned about their child's use of technologies that they, the parent, do not understand. While the world of IM, Bebo and SMS seems far removed for many parents, shouldn't this be encouraging to the sector? Isn't there a huge groundswell of highly technically capable young people raring to engage with high flying careers in this creative, constantly moving, exciting sector?

Well, quite frankly, no there isn't. The British Computer Society reports a 50% drop in Computer Science applications between 2001 and 2007 and eSkills report that the number of IT graduates per year is nowhere near meeting the demand for professionals in the sector - less than 15,000 graduates a year in a sector with more than 1,000,000 roles is not even meeting the "churn" of those nearing retirement. This is certainly cause for

concern - will we return to the practice that often occurred during the .com boom, where graduates without an IT related degree were fast tracked into the profession to fill the gaps that could not be filled by those with professional knowledge? Would we be so accepting of this within other professional practice? I propose a scenario with my own students of visiting a surgeon who studied Geography (for reasons I could never fathom, I have met a lot of Geography graduates who ended up as IT project managers) and then explained that they were moved into surgery because they couldn't get a job in their chosen degree subject.

Non-specialisation

I am aware it is somewhat unlikely to encounter a surgeon with a geography degree, but it is far more likely to meet someone who does not have a related qualification working in ICT. We are in an industry striving for more widespread professional recognition yet seem more accepting of non-specialist knowledge at an entry level than many other professions. Professional practice has, at its

foundation, a well defined, technically and intellectually demanding knowledge base. We are beginning to acknowledge this with ICT - it is generally accepted that it is now a graduate profession. However, a concerning trend is that in the case that if positions cannot be filled by graduates with an ICT related degree, a graduate from a different discipline "will do".

It is important (some might say crucial) to the future prosperity of the profession, that we develop sustainable strategy to resource the sector. And worryingly, the statistics would suggest that, if anything, the resource will reduce, not increase.

We are in an interesting situation - a generation of young people who are highly engaged with the digital technologies we, as a sector, develop. We need also bear in mind that this is the first generation for which the Web has always existed - the so called 'digital natives'. Certainly, when I am in classrooms with young people, when I pose the question "Do you remember a time when there wasn't the Internet?" I am met with confused looks and a feeling of my own advancing years! Other questions with similar responses include "Hands up who buys music from a record shop" and "Who wears a watch". The second question might not seems to have a foundation in ICT, but one of my own students once observed one can estimate someone's age from whether they wear a watch. Young people do not, as they have a mobile device that tells them the time. While the older generation have a separatist view of technology - mobile phone for calls, camera for pictures, watch for time, young people are happy for multiple functional aspects within a single device.

Digital natives

It should be this generation we are turning to for the future of the sector - the digital natives will create ways of using technology we never thought of. The Internet is not new to them - something they have to integrate into our existing mental models and

metaphors of the world. It is something that has always been there with them. The potential is massive but the reality is far more worrying.

In my role as admissions tutor for Computing subjects at the University of Plymouth, I regularly visit schools and colleges to promote the sector (and, indirectly, the degrees we offer in order to get there). On a recent visit to a local school, I gave a talk to the whole of Year 8 (ages 12-13) that examined what ICT means to business and society, and what people who work in delivering ICT actually do. I also examined a couple of success stories within ICT to which they could relate - Grand Theft Auto IV (which, even with an eighteen certificate, seemed to be very familiar to the audience), and Mark Zuckerberg, the creator of Facebook, whose reported company and personal wealth seem to attract some surprise and excitement. What was most interesting, however, from my perspective, was that when we asked at the start of the talk for a show of hands for those who might be interested in a career in IT, around 10% of the audience of 200 put up their hands.

However, when I visit older school children, those either at year 11 or 12 (15-17 year olds), the perception and attitude toward ICT is somewhat different. During these more focussed visits I work with smaller groups, which provides the opportunity for more in depth research. Within these sessions, prior to talking about the sector, I invite opinions from the class regarding three factors - what sort of people work in ICT, what sort of skills are needed to work in ICT and what sort of careers can one expect.

Feedback

The feedback from these groups is both interesting and alarming. The quote at the start of the article was something offered from one 15 year old girl when I asked what sort of people work in ICT. While this is an amusing response, it was certainly not out of the ordinary. The majority of young people at this age view ICT as

something of interest only to those who wish to sit in front of walls of computers, with little contact with the outside world (aside from those they interact with via the Internet). The skill set required (or their perception of the skill set required) reinforces this stereotypical view - numeracy skills, "computer skills", the ability to be able to plug cables into boxes, the ability to be able to fix computers, and "write programs".

And finally, in considering the sorts of careers they are aware of, we arrive at the standard stereotypes: ICT teacher, technician or, for want of a better word, data processing - working with office applications to write documents, spreadsheets, etc. Occasionally we will encounter those who suggest games developer or website designer, but these are very much in the minority.

This research does not exist with a single class; it is unswerving across different schools and locales visited over the last two years. Results are consistent and generalisable - the ICT sector has an image problem. Perhaps this is not surprising, we are not a visible sector, there are no role models (with the exception of perhaps the IT Crowd on Channel 4, which doesn't do a lot to challenge the stereotypes!) available to young people. It is only the produce of the sector that is visible to young people - the technologies and applications, yet it would seem they do not consider these to be "ICT". Indeed, I have, on several occasions raised this issue with classes and are met with similar responses - "iPods/Mobile phones/MSN/Bebo/gaming isn't ICT - that's just everyday life". When pursuing this line of enquiry, it would seem that that "ICT" is spreadsheets, word processing, desktop publishing and databases.

ICT in schools

From our research, we have an interesting pattern - at aged 12 or 13, young people have an enthusiasm for the subject, make use of all manner of ICT in their social lives, and some wish to develop their interests into a career.

By 15 or 16 this interest and enthusiasm has waned and old stereotypes replace it. Further exploration of this pattern points to the delivery of "ICT" in schools. An examination of the GCSE syllabus shows out-of-date perceptions of ICT where the only skills developed in detail are those required to work with Microsoft Office. Where is the digital media, the web development, the mobile devices, even gaming? There seems to be little to build upon young people's natural enthusiasm for all thing digital and relate them to the wider world (and potential careers) of ICT. Is it any wonder that young people cannot relate their social digital world to the ICT industry when their education does not illustrate the linkage?

I would stress that I feel the criticism lies with those who define curricula, not those who deliver it. I have had many conversations with teachers who are keen to develop the enthusiasm in young people into sound academic achievement, but feel hamstrung by a syllabus they are forced to deliver. I have also spoken with some who have had ICT thrust upon them - they have moved into the subject area when another member of staff has left their school. They have no formal grounding in the nature of the subject (an interesting parallel with the sector as whole?) and are working from books to deliver a syllabus they don't really understand.

The next generation

If we are to look to the next generation of ICT professionals with any enthusiasm, the nature of education in our schools needs to change. There are certainly some lights on the horizon - the recently introduced OCR National and DIDA qualifications all seem to be attempts by some exam boards to modernise the ICT curriculum and attempt to relate to the social and business worlds in which ICT exists. The IT Diploma also defines a curriculum that is industry focused, with the opportunity to be innovative in the delivery of its teaching, incorporating employer and HE engagement.

However, these qualifications will still need to be delivered by ICT teachers who, in many instances, do not feel they are part of the sector, and lack confidence to deliver the subject. In my work with local diploma consortia who are working toward delivering the new IT Diploma, many have mentioned a lack of understanding about the proposed curriculum, and how on earth they might engage with industry. I believe there is potential for collaboration and partnership from the different facets of the sector in order to address this issue. Employers complain about the lack of appropriate resources available to them to grow their ICT capability, and HEIs complain about the lack of applicants to their courses and the quality of ICT education in schools. Rather than sitting back moaning about these things, hoping someone else might address them, could HEIs not have a strong role to play on two fronts? Firstly, while teachers in schools are a degree of separation from industry, HE fits up against it. We attract applicants who are interested in careers in ICT and who expect to graduate into the profession. Therefore we should already have relationships with employers which can be extended back into schools, if we facilitate the interaction. We can bridge the gap between schools and employers, and facilitate the relationship between them.

Partnerships

More significantly, HE should have a partnership role to play with schools in developing subject specific knowledge, as well as simply viewing them as a conduit for applicants to courses. With the shrinking demography that has resulted from tuition fees and widening participation strategies, partnerships with local schools can be built without significant impact upon resources. The knock-on effects can be rewarding - talking directly to careers tutors and subject teachers in schools can change stereotypical perceptions of the sector, and a strong relationship results in agents for recruitment to HE becoming embedded within the schools. Certainly, in our own experience of

working with schools, we have noticed an extremely positive impact of such strategy upon our applicant numbers.
However, it is important that this is a partnership and not one way. It requires HEIs to accept that they too are part of the whole education and career development process- the degree is not the end result, it is the start of a career. I have already read criticism in some HE quarters about the nature of the IT diploma and the lack of mathematics content. Given that the majority of the sector does not ask for A-level maths as a pre-requisite for the graduate recruitment programmes, it is interesting that some HEIs still do. Are they fitting in with sector need, or recruiting to their own product?

There is clearly work to be done in order to forecast an optimistic future for the next generation of the ICT sector - if we are to harness the enthusiasm of today's digital natives to take the sector to places we couldn't possibly imagine ten years ago, we need to address ICT education in schools. That doesn't mean moaning about it and hoping someone else will sort it out. It means industry and HE work with schools to give teachers to confidence to deliver innovative curriculum to enthuse and engage with young people, and to communicate directly with young people to make them realise that our sector is exciting, constantly changing and vibrant - the foundation of business and, increasingly, society across the whole country.

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The Satyam aftermath in India

By Laura Mackay

In January this year Satyam Computer Services received a letter from its Chairman and Founder Mr. B Ramalinga Raju. The letter was far from a New Year message of goodwill; instead, it was a statement detailing his involvement in a $1billion (£661million) fraud and led to his resignation from the Hyderabad based Indian IT company.

The catastrophe shocked the business world shortly following the Mumbai terror attacks and at a time when the stock market and investor confidence was, and still remains, very tenuous. The Satyam crisis is somewhat representative of the current, greater economic picture of some of the worlds' financial leaders' lack of principle and judgement.

Reputation

India's reputation as a significant contender in the business of outsourcing was immediately affected - investor confidence dropped in January causing the Indian market to plummet. The timing of the scam could not have been worse. As *The Indian Express* newspaper explains: 'Domestic investors have been reluctant to move out of the safest of investments; and foreign investors traditionally move out of emerging markets in times of crisis anyway'.

The Hindu remarks: 'The reckless strategy to window-dress the accounts artificially boosted its key parameters'. However, what started as a smaller scale falsification of accounts, extended out of control with Satyam (which means 'truth' in Sanskrit) declaring it had doubled its revenue from $1billon in 2006 to $2billion by 2008. How did Raju manage to forge these figures on his own, as he claims, without the experienced board suspecting a problem? This question will place doubt, in the minds of foreign investors, on the reliability of the current corporate governance system in India.

Positive effects

A more positive effect, resulting from the crisis, is that India will be forced to examine its corporate ethics - something which the entire business world could do with at this time - resulting in better structured, moral organisations. A second opportunity to progress may arise from how the investigation is handled and conducted by India's Central Bureau of Investigation. If the outcome inflicts a harsh warning on business leaders worldwide then it may go some way to restoring faith in the Indian system. By showing that India will not tolerate disloyalty and corruption, they could take a serious step towards leading global powers to change their business mindset.

Major companies and corporations, which have relied upon Satyam through a variety of alliances or acquisitions, may now also suffer as an upshot of Raju's ruse.

Since 2008 Satyam's advertising campaigns have shared a simple statement - 'Business Transformation. Together'. It had alliances with large scale companies such as Microsoft, Adobe, IBM and Fujitsu.

Partnerships

Companies like Microsoft, which in 2007 awarded Satyam their Citizenship Partner of the Year Award, supply the software application, whilst Satyam acts in an advisory capacity initiating content development, custom application development and systems integration, to name a few of their services. On a trip to Singapore, newly appointed CEO, Mr A.S. Murty, said that they were operating 'business as usual'. He also said, 'since the beginning of 2009, we have seen a record level of new contracts in the region, which shows the confidence our customers and the industry continue to have in us.'

However, with the World Bank having disclosed a list of banned companies, which identified Satyam as forbidden from receiving direct contracts under the World Bank's corporate procurement program for the next 8 years, the company will have to make sure it can retain most of the vast amount of business it has procured since its establishment in June 1987.

The future

By September 2008, Satyam was delivering its expertise to clients in 20 industries and more than 65 countries. What does the future hold? Currently, Satyam is going through a process which may aid the stabilization of the company. A new government selected executive board, the appointment of Deloitte and KPMG as auditors, and the announcement in March which launched the search for an investor (to acquire a 51% equity), are all significant moves to rescue Satyam.

The company has preserved a deal with FIFA that ensures they will operate as the official IT services provider for the FIFA 2010 World Cup, and Satyam were recently ranked eigth in *Training Magazine's* top 125. These factors may offer small consolation to employees (over 50,000 as of September 2008) at Satyam, but they just might sustain the company.The leaders at Satyam face an arduous challenge to save the company in addition to helping to extinguish the mark the crisis has left on the reputation of India's business landscape. As Satyam's most recent advertising campaign stated, 'Change is out, transformation is in.'

Financial Discipline
As a Means of Checking the Effects of Future Financial Crises

Dr Joy K.Joseph, specialist in Personal Finance of the British Institute of Technology and E-Commerce

The twenty-first century was born in a world of financial indiscipline, garlanded by the total financial insecurity of the young and old, rich and the poor, the developed and undeveloped. The global recession is overwhelming and countries are even thinking of going back to closed-door economic policies and dependence on internal marketing dynamics.

The current economic crisis has jeopardised the entire banking business, which is based on credit and customer confidence. Nobody knows exactly why it happened and when it started, how long it will continue and much less how it will be resolved.

In my series of articles I will be addressing the following questions. When it comes to personal finance what is the best way to handle our surplus money? Is there any safe, convenient, profitable and cost-effective method of investment? Is our money guaranteed especially funds put aside for retirement? Are we totally dependent on banks who can only offer sureties for half of the original sum of money deposited by investors? Is there any real value of paper money when even the richest countries no longer strictly adhere to their own fiduciary systems?

An attitude of 'Eat, drink and be merry, for tomorrow we may die' undermined the value of saving. Perhaps there is a need for a new and more powerful medium of exchange.

Some of the questions I would like to ask everyone regarding the credit crunch and the recession include:

- Are the measures taken so far by government appropriate?

- Are we financially disciplined?

- Are we interested in learning about personal finance as part of a life-long education policy?

- Should personal finance be taught in our schools and universities?

- Can we start now so that we will learn how to manage our money properly and reduce future worries like that of the present credit crunch?

A micro solution to the macro-problem is financial discipline. If people are financially disciplined they can manage their money properly wherever they are. The lack of proper personal value systems can be seen as having paved the way for financial chaos and the downturn of the economy.

A finance manager of a company must consider the various sources of finance and their cost so that senior managers can prepare an effective financial plan within the budgeting process. Through various tools of financial analysis of the financial performance, liquidity and efficiency from various angles they can also observe the appropriateness of the valuation of its assets.

By proper analysis of the historical data and systematic observation of the current situation with their powers of forecasting, financial managers can prepare departmental budgets. By coordinating minor budgets through a master-budget, they can link together the targeted performance and efficiency of various departments. An effective budgetary control process encompasses the comparison of the budgeted figures with the actual ones to see if corrective action is necessary.

If the variation is favourable to the business, a manager can take effective steps to promote the performance of the people individually and collectively as a team through proper appreciation and incentives. On the other hand, if the variation is unfavorable, they can observe the key factors responsible for the variations from each centre of responsibility.

An efficient finance manager can also adopt various measures of quality control and standards. Total Quality Management, Quality Circle, and Kaizen (a step by step improvement programme) can facilitate the improvement of the quality and the optimum way of doing things as suggested by the father of scientific management, F.W.Taylor. Every unit should be responsible for achieving the targets as per the specified quality standards. A quality circle round-table can be convened at least once a month, with participation from each department-even including the security personnel. At the same time a step by step improvement of the standard and efficiency of human resources can be achieved through proper training and continuous life-long learning plan.

A performance can be assessed according to the accounting standards laid down for public limited companies. Financial reports, certified by the chief executive and supported by qualified and legally responsible accountants and based on vital financial and investment decisions, are published each financial year for assessment. I wonder how the present crises happened in this sophisticated, scientific and technically advanced society.

Most consumers, especially in the US and in the UK have been living beyond their means by borrowing money for meeting such long-term financial objectives like buying houses, for education and even for day-to-day spending. Even though there were problems with mortgage repayments from new entrants in the housing markets, more liberal loan policies and incentive schemes for mortgage sales staff created bad lending decisions.

There was nothing especially memorable about August 9, 2007, with the holiday season in full swing… house prices were rising, unemployment was falling, and the economy was growing...It was, however, the day the world changed. As far as the financial markets are concerned, August 9 2007 has all the resonance of August 4, 1914. It marks the cut-off point between "an Edwardian summer" of prosperity and tranquility and the trench warfare of the credit crunch- the failed banks, the petrified markets, the property markets blown to pieces by a shortage of credit…

Larry Elliot, economics editor,
The Guardian, Tuesday 5th August 2008

When the market fell mortgage-backed securities proved insufficient and people lost faith in banks and total insecurity was the order of the day. Even though governments and financial authorities like the central banks came up with credit control measures, people were squeezed by various means. Millions lost jobs, taxpayers' money was used to support inefficient institutions and day by day tight rules and enactments were imposed on ordinary consumers.

Alistair Darling has accepted that another emergency package of tax and spending measures may be needed to claw the economy out of a deepening recession.[11] Consumers are left wondering:

- Have the customers and investors been cheated over a long period?
- What is the real problem?
- Is there any security for our money?
- Are the government and financial authorities on the right track for solving the problem?
- What is the future of the banking system?
- Why were certain countries very severely affected and others less affected?
- What are the implications for the stock market?

Consumers must take on board responsibility for their finances and not leave it to the financial community. They must be more responsible and well-disciplined in managing their money more efficiently. Personal Financial Planning is a pre-requisite for financial discipline and freedom. We have to learn to live within our means, rather than trying to keep up with the Joneses. In the next issue I will consider "Personal Budgeting as an essential tool of financial control."

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Business Babylon

Robert Murray looks at books on business and is not impressed.

The current financial crisis has led to a somewhat cynical attitude towards a profession that is largely held responsible for actual mismanagement of the economy, rather than its safekeeping. The evidence of the books I have surveyed is that the language of business can be mindless, particularly when expressed in books written specifically for the vast market that exists for the study of the various areas that make up the subject of business management.

Yet it is not the books themselves, but the bad reputation that they have engendered in the minds of people outside the world of business that often makes them - and those who would avidly read them - the object of much derision. One may wonder what such books actually reveal about the world of business and what value they have, either as items of literary interest in themselves or as effective tools for learning about business and management.

Business and education

This question particularly applies to the - dare I say it? - 'interface' between business and education. There are thousands of Business Studies courses and MBAs on offer in universities and colleges of higher education throughout the world, each with its own characteristics. Some are defined by their pedigree such as Harvard Business School, others by what they seek to achieve for their students (working in particular industries. For instance, the British Institute of Technology and E-Commerce (BITE) specialising in the relationship between business and technological innovation). Yet they are all united in one thing - they all use the same written materials - basic text-books for the study of management, plus a variety of what could be termed 'supplementary' works.

A browse through the selection of books on business management in the recently expanded library at BITE reveals some unexpected items in this latter category. Most of the dedicated course-books on Business Management are soberly written, subject to scholarly recommendation, constantly revised and reprinted and presumably make their authors and publishers a tidy profit, thereby embodying the values of good business practice they are meant to espouse. However, it is books outside the category of dedicated textbooks that potentially tell us more about what the subject is actually about.

Business autobiography

First of all, there are the auto-biographical accounts of successful businessmen (usually written 'with' a ghost-writer, either named or not, which at least gives the book a shot at being readable, if not a literary masterpiece). For example, Jack Welch, the former CEO of the US giant General Electric produced an appropriately fat tome to match his ego, entitled Jack: What I've Learned from Leading a Great Company and Great People (2001, Headline). That's nice, Jack - presumably the 'great firm' you mention isn't one of the major air and water polluters in the United States, or the 'great people' you mention don't include the 112, 000 workers you fired between 1980 and 1985 in a policy of 'streamlining' the firm. There is also little justification given for the huge bonus he negotiated for himself on his retirement, which set a precedent for retiring CEOs on this side of the pond and is something which currently rankles with the vast majority of the public. His very surname is a word in British English that means 'betrayal' - 'to welch on a deal' - not that many readers of business books would spot the irony of this because the predominant style of the business writer is American

English. And that leads us to consider one of the main failings of the linguistic side of business books - they are written with the attitude, if not the actual style, of 'American', rather than 'British' English. Presumably books on business management written in, say, German are not all mere translations from American English into *Deutsche*, but reflect the experience and conditions particular to the German business world - including, for example, the legacy of the mammoth achievement of the economic reconstruction of the country after the last war. Yet British business books are so overwhelmed by the American model of business and accordingly reflect this subservience in terms of their composition that they fail to recognise the unique character of the business world that exists in the United Kingdom.

Self-help

This is seen in another category of business book, the 'self-help' book. These are not necessarily about business or management as such, but more about lifestyle. Of course, the lifestyle that proselytisers like Tony Robbins (with the expensive accompanying 'Change Your Life' meetings and courses) is only affordable to those who have already reached a certain level of economic success in their lives. It is somewhat preaching to the converted and so it follows that the actual texts that advertise a better life ('… and how to get it') adopt a quasi-religious approach that tends towards simplistic platitudes. Again, this all very American, but more out of necessity, as the British tend to be more cynical about schemes which promise a Heaven on Earth goal, especially when it now may seem an ever-decreasing possibility.

Such works as Robbins' Unlimited Power (1987) and Awaken the Giant Within (1992) (the titles alone give the game away as to their glad-handing and back-slapping

SUDOKU

Solution on back page

intentions) provided the template for all the 'You Are a Tiger'-type of business books. There was a fashion for these in Britain in the wake of the 'Big Bang' in the mid-1980s and the unprecedented spate of enthusiasm for untrammelled capitalism. Yet Robbins and his ilk were only pursuing the evangelistic approach established by the preacher Norman Vincent Peale, whose religiously-oriented The Power of Positive Thinking has sold just over five million copies since it was published in 1952 and whose comforting platitudes appeal to people who are specifically 'business-minded', rather than actual students of business management itself. *Plus ca change* (as practitioners of British English would like to say).

Economic Crisis

Of course the deregulation of the City is seen by some as sowing the seeds of

the present economic decline, but that is not something that unduly concerns the business book author. In fact, there are many books that revel in a smug tone of 'I Told You So', a case in point being Antilogic: Why Businesses Fail While Individuals Succeed, by Bruce Sinclair McComish (2001, John Wiley and Sons). The actual point of many books on business - and particularly on management - is to be wise after the event, to work through an analysis of a situation within the safe confines of a university study, rather than a boardroom or a shop-floor. In twenty years' time there are going to be some great books on the current economic crisis, if only because there is so much business and managerial theory to measure the evidence of current economic failure against.

This leads me to the third category of business book - the consciously 'literary' effort. When writing a book about business and management, it must be tempting for an author to take a dip in the vast pool of world literature. Indeed, one suspects that many business writers are frustrated arts graduates rather than alumni from Business Schools. The most basic device employed is the fable. In Beans: Four Principles for Running a Business in Good Times or Bad - A Business Fable Taken From Real Life (the title alone is almost as long as the book!) by Leslie A. Yerkes and Charles Decker (2003, John Wiley and Sons), the fictional element is so great that it virtually eliminates the original intention of showing how an ailing enterprise (a coffee shop - geddit?) can be rescued through astute management. It's actually a better read for the literary approach taken - the authors should be writing for a TV. sit com!

Bizz lit

The literary approach is also a good counterbalance to the rather one-dimensional one previously taken in more 'conventional' business books. This has even been extended to the world of music. A best seller in the business book genre is Funky Business, by Jonas Ridderstale and Kjell Nordstrom (2000, Prentice Hall), which imagines the business world as a giant disco - or perhaps a warehouse party - one where new ideas are as valued a commodity as youth (although as the authors are evidently no spring chickens, this is an act of making wishful thinking a valuable asset as well!)

In itself, this is not necessarily a bad thing. As a genre in itself, the business book can appeal to readers from outside an often enclosed world and make what often appears to be its 'black arts' seem less sinister and more a part of the general pattern of human life. It can also complement knowledge already gained in other, unlikely, fields. In this regard, the most interesting book on management for me is Paul Corrigan's Shakespeare on Management: Leadership Lessons For Today's Managers (1999, Kogan Page). This takes the unique approach of relating Shakespeare's plays to managerial situations like takeovers and 'downsizing'. It isn't a gimmick either - it's one of the most intriguing works on Shakespeare (something I actually studied at school and university, rather than Business and Management) I have come across.

Business tragedy

Although this is the type of book that most university professors of English would sneer at, it being so vulgar to equate the Bard with the grubby world of business, the equation of Shakespearean heroes and villains and their psychological motivation with present-day business situations is fascinating. It reminds us that the Elizabethan world was far more cutthroat (literally so) than the shenanigans that go on in the City or Wall Street and this is something we should all remember when bemoaning the volatile state of the market today. At least Corrigan's book is not, unlike many works of both business management and literary criticism, '…a tale told by an idiot, full of sound and fury, signifying nothing' (Macbeth, Act 5, Scene 5, lines 17-28)

In the end, books on business management can be seen as at best informative and at worst entertaining - or vice-versa, depending on your personal taste. My own example on the best business and management writing comes from a sign I saw on a stall at that bear-pit of British capitalist enterprise, Bonzers Boot Sale on Eastern Avenue, on the way to Romford. Whether it was making a self-conscious literary reference to a pre-war American English term for a police informer - and the fate that awaited them for their treachery - or just a symptom of the poor standards of the British education system, I don't know.

It read:

'Every fink must go'

Straight and to the point. What every business book should aspire to be.
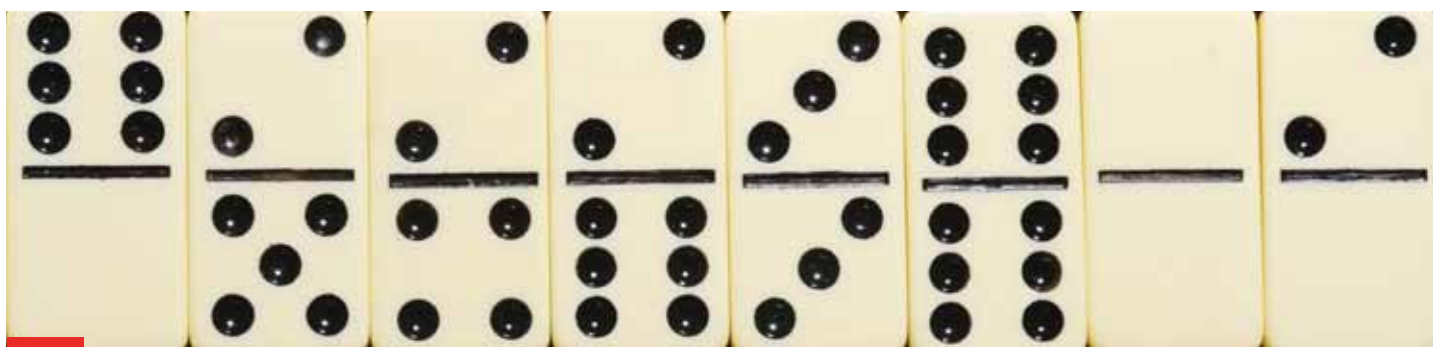
Bespoke Techno Tailoring

By Yakub Ahmed

The hand-tailored (or bespoke) suit is the most expensive and time-consuming form of suit manufacturing. The suit pattern is generated by hand, and the cut, style, and fit of the suit are specifically crafted to the needs of the individual customer. Many of the shaping steps in the tailoring process are also done by hand creating a unique product.

The suit could provide a useful platform, due to its relatively extensive built-in structures and volumes, as compared to other garments for incorporating new technology into a garment. The tailoring process imparts a sculptured three dimensional form to a garment. Shape is commonly created in the lapels, shoulders collar, and sleeves. Tailoring techniques use layers of interfacing of various weights and cotton batting to build forms into a fabric shell.

The tailor's art is that of camouflaging defects and building flattering shapes on the human form. Shape is built in three ways, first by cutting the flat pieces of a garment and stitching them together to form a three dimensional garment, then by pad-stitching together layers of interior materials (interfacing, batting) to create a

reinforced curve, or finally by steaming woollen textiles and blocking them into shape.

The problem with incorporating technology into clothing is that it tends to be unsightly, bulky and not pleasing to the eye. Maybe that is the reason that it has not taken off so far. Technology and style can be combined together if the right techniques are used. There could be an uphill struggle in changing the mindset of the British tailoring establishment which tends to be very traditional in its ways for embracing change and new technology.

There is however on the scene one British tailor who has already taken a step forward in breathing air into the stuffy world of bespoke tailoring. Sir Tom Baker is not afraid of using unusual embellishment and combining technology with the bespoke. Tom has already worked with British electronic band Depeche Mode designing outfits that incorporate storage for microphones and mobile phones.

Sir Tom Baker is a product of the traditional Savile Row tailoring industry who has firmly placed himself in the forefront of a new breed of British tailors. Sir Tom first learned the art of suit making whilst working for Hardy Amies in the famous Savile Row tailoring street of London before setting up his own workshop in Berwick Street, Soho in 1996.

Whilst still retaining the Berwick Street workroom, true to Tom's quirky style he opened up his shop in July 2008 in D'Arbley Street, Soho. The shop has a sales and fitting room on the ground floor, storage space in the basement as well as having additional workspace

upstairs. The listed building that dates back to 1737 has retained much of its old character and from the outside looks like a movie prop from a Charles Dickens film.

Sir Tom's motto "Maintain traditional techniques but modernise the styles" has helped him to gain a list of clients that include the front man of Led Zeppelin, Robert Plant, Mick Jagger from the Rolling Stones, Take That, Britain's Saturday primetime T.V combo Ant and Dec and some style conscious politicians.

"To look and feel good, dress up in a sharp suit with a serious bit of footwear and headgear and forget about it once you've left home", is what Tom Quotes regards as the ethos behind the shop. Besides stocking Tom's bespoke clothes and ready-to-wear collection, the shop also has a bespoke shoe service by label owner de Havilland and selection of Stephen's hand made hats.

Sir Tom Baker can be found at 4 D'Arbley Street, Soho.

www.tombakerlondon.com
www.archieeyebrows.co.uk
www.stephenjonesmillinerey.com

China's High-Tech Aspirations

By Dr Ying Lui

China's rate of expansion in the technology field has been astounding. It is the world leader in mobile-phone use and last year surpassed the US as the number-one nation in the use of the Internet. Its high-tech manufacturing industry is now ranked second in the world, with its products in new technology making up around 20% of the international market. The number of PCs in China is doubling every 28 months [1]. It will only be a matter of time before China replaces the US as the world's top consumer [2].

Yet this is hardly surprising if one considers China's population of 1.3 billion people, its low-cost, labour-intensive manufacturing industry and the significant leaps forward made in economic, political, social and other areas. The country has undergone a complete make-over from the time when it was an isolated South-East Asian backwater. However, what seems much less understood are China's greater aspirations - the acceleration of High-Tech innovation and industries. This article will give a brief glimpse into recent developments in this field.

OLYMPIAN ACHIEVEMENTS

First of all, in the year of 2008 alone, there were ten breakthroughs in Chinese science and technology [3] - all, arguably, on a much bigger scale than the Olympic Games that took place in Beijing in that year. These were:

1) The launch of Shenzhou-7 and the first time that Chinese astronauts performed a spacewalk. (In 2008 alone, China had a total of ten space-launches, the Shenzhou-7 space-walk laying the foundation for the construction of China's space-station as well as two environmental satellites, a meteorological satellite and a communications satellite for Venezuela);

2) The breakthrough in the research and application of China's Next Generation Internet;

3) The Beijing-Tianjin China High-Speed Railway was put into service;

4) The development of the diploid genome sequence of the Asian people;

5) The completion of the second phase of the construction of the Beijing electron-positon collider;

6) The Dawning 5000A supercomputer being among the Top Ten of the world's most powerful supercomputers;

7) The installation of the Sky Area Multi-Object Fibre Spectroscopic Telescope installed in the National Astronomical Observatories;

8) The successful trial flight of the ARJ-21 Jet;

9) The first experimental realisation of the 'quantum repeater';

10) The development of Bt-transgenic cotton, which alleviates insect damage to cotton crops.

Indeed, China is leading the world in cutting-edge technology. In physics, the areas of nanoscience, quantum computing and high-temperature superconductivity have seen particularly notable developments [4]. The number of research articles in nanoscience written in China has increased dramatically [5]. China continues to host many international, scientific and nanotech conferences, as well as to earn significant positions in internationally-hosted, scientifically-related events.

An example of Chinese nanotech-industry is the creation self-cleaning tiles, paints and other building materials. As new nanotechnological discoveries are developed, the impact of nanotechnology increases, and consumers are beginning to see more such products on the market.

China is also taking the lead in the field of green technology. At the end of 2008, two Chinese companies proposed building a massive, one-gigawatt solar photovoltaic power plant in China's northwest which, when completed, will be the world's largest solar power plant [6].

KEEP ON MOVING

Transportation and agriculture are two other areas of technological innovation. China has doubled its rail tracks to alleviate freight-train traffic issues, and has also built more expressways for road transport. Its airports are also fast-improving and it is now making greater use of its shipping ports. These are more automated, which has minimised loss of goods and unloading time, while helping Customs collect more accurate tariffs. They are now co-operating more with other countries to maximise turnover. Agricultural technology is important to China. There has been an improvement in seed technology in tracking the changes in the quantity and quality of genetic resources. The new technology is mainly produced by China's domestic research system [7].

A RELAY OF KNOWLEDGE

Furthermore, China continues to improve its independent innovative capabilities in high-tech industry. Construction has already started on four major national science and technology infrastructure projects, six national engineering laboratories and nine national engineering research centres. In addition, 124 national business technology centres gained funding to improve their innovation capabilities. Construction for an experimental network of third-generation mobile telecommunication systems (TD-SCDMA), involving intellectual property rights, has also progressed through various stages. Chinese Information Technology spending remains strong and will reach £36.2 billion in 2009, the result of an incremental 11% yearly growth [8]. Experts say [9] that China's IT market growth has largely been protected from the global financial crisis because its export industry is not a key buyer of technology - an advantage of a homegrown industry. China's huge domestic market and its highly regulated financial system also play a part in helping the country cope with the market conditions. Many of China's well-known ICT companies are thriving: Lenovo, the world third largest

person computer manufacturer; Baidu, China's leading Internet search engine company; UFIDA, China's largest privately-owned software company; Founder, China's largest digital media company; Datang, one of China's largest telecommunication solution companies; Aigo, China's leading portable storage and digital entertainment product maker, and Sina.com and Sohu.com, two of China's most popular Internet portals.

THE GROWTH OF IDEAS

So, finally having become the digital workshop of the world, is China poised to storm the bastions of high-tech industries elsewhere? This question is starting to be taken seriously. Experts point to positives like a rising aggressive entrepreneurial class, legions of recent science and engineering graduates and a fiercely competitive domestic marketplace [10]. Peter J. Williamson, a professor of Management at Cambridge University, even challenges the notion that China does not have the technological know-how: 'They are some of the biggest in launching satellites. They have a lot of technology locked up in the military, and now the government is reducing budgets and pressing agencies to privatize' he said. 'So suddenly, a lot of technology people thought didn't exist has come out from behind the curtain.' [11]

Undoubtedly, there are plenty of serious obstacles on this ambitious journey. For example, how can intellectual property laws be strengthened enough to provide rewards for innovation? China's international patent applications, though increasing, are still less than one per cent of the total filed in the US and Europe. And while start-up companies abound in China, they are poorly supported by its financial

Photo : Li Haichuan

system, because of a lack of credit mechanisms.

McKinsey, the management consultancy, gives another example, saying China's software industry lags behind India's because of its fragmented structure and poor management [12]. This may change, as more foreign-trained IT engineers with business experience return from the West, but nevertheless, China faces barriers to disseminating technological ideas across industry. "Not only are foreign companies operating in China increasingly careful to keep core technologies to themselves but Chinese companies collaborate little with each other or with universities" [13].

LIFTING THE BAMBOO CURTAIN

The global financial crisis has had "a rather big impact" on China's economy, the country's Premier Wen Jiabao said in a major World Economic Forum speech. Speaking in Davos in Switzerland, he said the crisis had placed the world economy in the most difficult situation since the Great Depression. In China, he said, there was rising unemployment in rural areas and "downward pressure on economic growth." But he added that China's economy was in good shape "on the whole." China's economy grew by 9% in 2008, but only by 6.8% in the final quarter of the year, as overseas demand for China's exports shrank. "The Chinese economy is now under

River Deltas and the Circum-Bohai Sea Region have been marked out as major innovation bases, with big cities and High-Tech industrial parks required to play the leading roles. Integrated circuits, software engineering, new generation telecommunications, internet and digital audio and video applications, advanced computing, bio-medicine, civil aviation, satellites and new materials have been selected as key development areas.

Can China's High-Tech aspirations help to maintain its spectacular economic rise? President Hu Jintao hinted at this during a meeting at the Chinese Academy of Sciences last June, calling on scientists to challenge other countries in High-Tech: "We are ready for a fight to control the scientific high ground and earn a seat on the world's high technology board. We will make some serious efforts to strengthen our nation's competence." It seems that the Bamboo Curtain has finally been lifted.

mounting downward pressure," said Premier Wen Jiabao. "We are targeting a growth rate of about 8% in 2009. It will be a tall order, but I hold the conviction that through hard work, we can reach the goal." As the demand for China's exports shrinks, he said that as part of re-launching the economy, the country had to focus now on expanding domestic consumer demand.

Yet the emphasis is shifting from expansion to beefing up the capacity to innovate. The Chinese government is backing the high-tech aspiration with a two-pronged approach: using incentives to encourage companies to innovate, while discouraging the proliferation of low-end manufacturers, particularly in southern China. The transformation has been written into the 11th Five-year Plan for High-Tech Industry (2006-2010) released by the National Development and Reform Commission, with the approval of the State Council, China's Cabinet. Under the plan, domestic high-tech firms should see the number of patents they take out double between 2005 and 2010 and should achieve more than half of their industrial output and 15 percent of their exports from locally-invented new high technologies. Geographically, the Yangtze and Pearl

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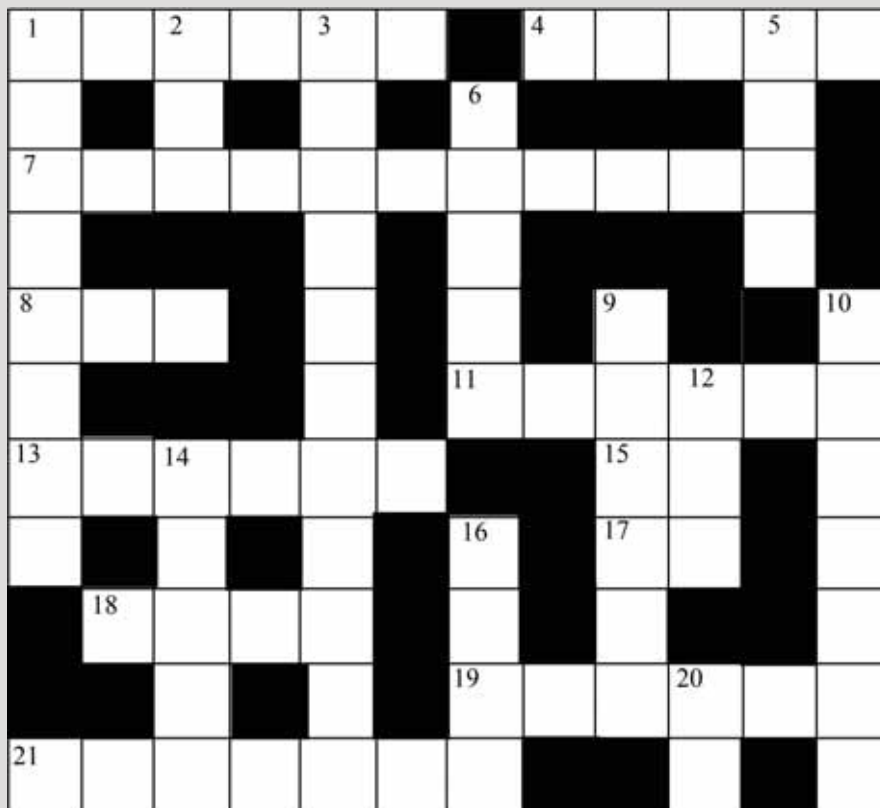
THE SECRET OF SILK

Sericulture is the production of silk, that light, soft, shiny, airy and expensive fabric which leaves such a pleasant feeling on the skin.

Silk originated in China about 6,000 years ago. Its fabrication was a close secret for thousands of years and was envied by the rest of the World. However, as the Chinese started to emigrate around 200 BC, the secret filtered out. In 139 BC, the famous Silk Road stretching from Eastern China to the Mediterranean Sea opened and by 300 AD, India discovered the secret and started production. The Greeks and Romans were also fond of it but only the rich and nobles could afford it. Finally, in 1271, Marco Polo, a Venetian explorer (1254-1324) journeyed along the Silk Road for three years and brought back an account of his travels in his book *The Travels of Marco Polo* which spread the myth of a Far East fabulously wealthy. Italy undertook silk production and this propagated it throughout Europe.

Silk is made by caterpillars of the silkworm family. To obtain the best quality silk the only species of moths to consider is the Bombyx Mori whose larvae have to be fed fresh, white mulberry leaves. A female silkworm produces around 500 tiny eggs at a time. The larvae hatch within ten days. For a month they are fattened up to multiply their weight by 10,000. Once mature enough they start to make their cocoon. To do so, they secrete some saliva from the silk glands which hardens in contact with the air. The cocoons are spun in 3 to 4 days. After 8 days the cocoons are baked to kill the young pupae still inside them to stop them damaging the former. The filament making the cocoon can reach up to 900 metres in length. Around 5 to 8 filaments are needed to make one thread of silk. Sericulture is a long process which demands patience and attention.

CHINESE CROSSWORD

Across
1 Sleep-like state without response (6)
4 Material made from cotton (5)
7 The art of writing by hand (11)
8 Green or black (3)
11 Quick-spreading fatal disease (6)
13 Fill with delight (6)
15 American soldier (2)
17 Preposition (2)

18 Gelatinous substance used in food (4)
19 Strong, athletic woman (6)
21 Light used during Chinese New Year (7)

Down
1 Not liking to say much (8)
2 To be ill and weak (3)
3 Use of Chinese motif in European painting (11)
5 To play with (4)
6 Group of soldiers (5)
9 Hindu or Buddhist temple (6)
10 Capital of China (7)
12 Alcoholic drink made from grain or berries (3)
14 A certain type of vegetarian (5)
16 Monetary unit of China (4)
20 Chemical symbol for zinc (2)

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Propelling Ghana Towards Becoming A Middle Income Country:
Is The Fair-Trade Concept The Solution?

By Dr Lawrence Akwetey

Introduction

A professor of law at the University of Ghana, Legon, once said this to his students: 'As a lawyer, when you are asked a question, you do not answer YES or NO; what you say is"…it depends."' But to this particular question on whether the Fair-trade concept contributes to propelling Ghana into becoming a middle income country, my answer is, Yes, Fair-trade will contribute greatly to making Ghana a middle-income country. Perhaps this is not guaranteed, but it will definitely contribute to Ghana's economic growth.

So what is a middle income country? The World Bank country classification describes a country whose Gross National Income (GNI) per capita ranges between US$876 and US$3,465 as a "lower middle income" country; those between US$3,466 and US$10,725 are "upper middle income" country. Ghana is currently nowhere near these figures. Can the Fair-trade concept help transform the country to this status? The answer again is Yes.

Fair or Free Trade: So what is the Fair-trade Concept?

The prime objective of Fair-trade is to develop access to markets in developed countries for producers who tend to be marginalised by conventional trading structures. Fair-trade focuses on producers where employment practices, environmental management and worker participation structures meet international Fair-trade standards. It also aims to assist disadvantaged producers.

Fair-trade encourages direct trade. i.e. Cocoa, for example, is bought directly from farmers' organisations and co-operatives at guaranteed prices. Most cocoa buyers trade through the world commodity markets, so the buyer and the seller never meet. Consequently, buyers do not know who the growers are, or how much they receive for their beans; neither is it possible for the buyers to know what conditions the producers work in. Through bypassing the international commodity market and buying direct from farmers' associations or co-operatives, fair-trade enables farmers to get a greater share of the rewards for their labour.

The Fair-price-Fair-trade criteria establishes a minimum guaranteed price that covers the cost of production and ensures a living wage for growers. The set fair-price is always the minimum price paid, but it rises in line with market prices, if they rise above the minimum Fair-trade price.

Premium: In addition to the purchase price paid by importers, a separate payment is made which is designated for social and economic development (e.g. health, education and other social facilities) in the cocoa producing communities. The Fair-trade premium for standard quality cocoa is US$150 per tonne and the minimum price for fair-trade standard quality cocoa (including the premium) is US$1,750 per tonne. Such fair practice, it can be argued, is able to help propel a country like Ghana into the middle income country status.

Licensee: A producer of the Fair-trade cocoa that has been certified by the Fair-trade Labelling Organisations (FLO) will apply to the Foundation's Licence Agreement which entitles the company to use the Fair-trade Mark. Registered Fair-trade buyers place orders well in advance so that producers can plan their business with some security.

In summary, Fair-trade is a trading partnership based on dialogue, transparency and respect that seeks greater equity in international trade, contributing to sustainable development by offering better trading conditions to, and securing the rights of, disadvantaged producers and

workers, especially of the developing countries.

But then, another school of thought believes that the modern world largely operates under a so-called free or Fair-trade system. This is the trading system embodied in or represented by the General Agreement on Tariffs and Trade (GATT), now replaced by the World Trade Organisation (WTO) under which about 75% of world trade is conducted. This system is called the "Multilateral Trading System (MTS) and other arrangements. Advocates of this system note that the benefits of trade will accrue to most people when trade of goods (imports and exports) and services between countries flow unhindered by government-imposed tariff and non-tariff barriers. Supply and demand of markets work freely to set prices. In addition, there will be a minimum of restraints when companies want to invest in domestic plants and equipment. Also certain industries will not get government financial help or subsidies in order to sell their goods at below-market prices.

If fair or free trade is operating as it should, (as seen in the opening paragraphs of this paper) then participating countries, such as Ghana, should earn considerable income to transform its status to that of a middle income country and the job creation that results can be an important force in improving the well-being or quality of life of its people.

But the big question is: Is fair or free trade really free or fair? The absence of trade barriers such as import duties, import and export licences, import quotas, tariffs, subsidies etc. which limit the freeness or fairness of trade (as described above) rarely exists in reality. Both the developed and developing countries engage in different kinds of trade restrictions. Some governments often place high tariffs or import quotas on the goods produced by similar foreign industries that are trying to access their markets.

Having to deal with such unequal situations and, sometimes, the whims and difficulties of an unstable world market, many developing countries like Ghana are finding out that the labours that their people have engaged in for generations simply no longer pay. In such a situation, Ghana's transformation into middle income status (a per capita income of US$1,000) is far fetched. Thus, Fair-trade, under the licenceship and Fair-trade mark of the FLO - as discussed earlier in the paper - yielding a considerable substantial income to the producer, could be argued to be a panacea to such a problem.

The international organisation, Oxfam, once noted that, "….if Africa, East Asia and Latin America were each to increase their share of world exports by one per cent, the resulting gains in income could lift 128 million people out of poverty." And this can only be made possible through fair or free trade.

Again, for Ghana, the realisation of such a goal will see an important lift into the middle income status.

Specifics: Issues dealing with constraints for the supply side constitute another factor. That is why, with Ghana's cocoa, for example, the Cocoa Council in the year of bumper harvest, educates, supports and advises cocoa farmers and buyers on how to preserve and store excess production. The registered Fair-trade buyers also assist with the pre-financing of some of these producers to make their products available for export. Producers may also request part-payment of orders in advance of delivery, for which a fair commercial cost should be passed on to the Fair-trade registered importer.

However, there is the argument that, like other agricultural products from Ghana, cocoa beans (in their raw state) enjoy over 90% of market access to buyers in foreign markets. But when the beans are processed, there ensues market entry problems; there is tariff escalation as value is added to the primary product. When cocoa is processed into chocolate, for example, the tariff goes as high as to 15%. This restricts considerably the level of income that Ghana would earn for the export of the processed product.

Furthermore, when the cocoa beans are processed in the EU for example, and the chocolates are exported back to Ghana and other developing countries, consumers in these countries pay considerably more to buy them. Many observers note that this is not the Fair-trade that will propel Ghana into a middle income status. Abolition of such tariffs, for example, would be in consonance with the Fair-trade concept that registered Fair-trade buyers already have in practice and that which will help Ghana achieve a middle income status.

Undoubtedly, some international buyers of Ghana's cocoa (Registered Fair-trade buyers), as we have seen earlier, strive to observe the rules of fair or free trade and give reasonable

concessions and rewards to producers of the primary product like cocoa. This sometimes reflects quite positively in the producer price that the cocoa farmer receives. However, it has also been observed that other buyers, who make sure that the outer world sees them as observing the WTO rules, use other indirect practices such as standards and technical barriers to stifle the exports from developing countries to the markets of the developed world.

For example, sanitary and phytosanitary standards of goods, levels of afflo-toxin and the general quality of consumer goods such as cocoa, coffee, pineapples, processed foods, etc. are used to prevent goods from developing countries entering these markets, although in most cases such standards have been complied with and certified by the exporting country's standards board.

Packaging (meaning goods should be packed in a specific way) and general conformity to rather too-high standards are also used. With these barriers in place, Ghana and other developing countries lose eligibility for preferential treatment under the WTO rules. Is there fair play in all these? Can such practices help push Ghana into a middle income status? The answer is No.

Conclusion

Some non-government organisations (NGOs) see the WTO as catering to rich country's interests at the expense of the poorer ones such as Ghana. Civil society groups are consistent in their message that, with a fairer trading system, developing countries like Ghana would receive income that would help their balance of trade positions, significant numbers of people could escape poverty and increase their quality of life, and countries such would be taking positive and giant steps toward achieving middle income status.

In his recent state of the nation address to parliament, the President of Ghana, His Excellency John Agyekum Kufuor, said: "...our path to success is benchmarked by our national vision of attaining a middle income status through a growth rate of 8% GDP annually, which translates to over US$1,000 per capita income within the next decade."

Well, according to the World Bank, Ghana needs only US$876 per capita to attain a middle income country status; not even the US$1,000 that the president said, and fair, free and transparent trade between Ghana and her trading partners, I believe, could help the country achieve this.

Finally, I would like to thank those companies and countries that trade with Ghana, particularly the registered Fair-trade buyers of Ghana's Cocoa, who accord the country a transparent observation of all the preferential schemes and treatment that the country deserves, and even more. However, I look forward to the day that producers of the world's primary products such as cocoa, coffee, pineapples, timber, copper, etc (e.g. countries like Ghana and the other developing countries) would be able to set the world market prices of these commodities themselves.

The interests of Ghana as a middle income status country, will be well served if trading partners go by, for example, the recent Hong Kong WTO Ministerial Declaration, which calls for substantial reductions in trade-distorting domestic support and other trade barriers. Fair and free trade will engender eradication of poverty and inequality, increase competiveness and strengthen institutions, promoting environmental sustainability, opening the way to the greater number of people gaining access to schools, hospitals (good health care), means of communication and transport, clean water, roads, etc.

For Ghana, if and when the Fair-trade concept helps bring about these changes, then achieving a middle income country status will not be far fetched.

Picasso and the Master Painters

Disciples be damned... It's only the masters that matter. Those who create.. Pablo Picasso

The National Gallery's first exhibition dedicated to Pablo Picasso which runs till 7 June, reveals how the greatest artist of the 20th century pitted himself against the great European painting tradition.

Seizing on the signature themes, techniques and artistic concerns of painters such as Velázquez, Rembrandt and Cézanne, Picasso transformed the art of the past into 'something else entirely', creating audacious paintings of his own. Sometimes his 'quotations' from the past were direct, at other times more allusive and, occasionally, full of parody and irreverence.

'Picasso: Challenging the Past' features over 60 of the artist's seminal works and focuses on the enduring themes of European art history and his own career, with sections on the self portrait, characters and types, the nude, still life, models and muses and the artist's later 'Variations'. Every major period of Picasso's oeuvre is represented with loans from among the leading public and private collections of Europe and North America.

Self Portraits

Picasso's complex self portraits show his deep fascination with a genre tackled by many of the artists he admired most. In 'Self Portrait with a Wig', 1897 (Museu Picasso, Barcelona), the sixteen-year-old depicts himself as an 18th-century gentleman, manipulating his appearance, challenging the Old Masters but also paying tribute to Goya and Rembrandt. Later in life, 'The Artist in front of his Canvas', 1938 (Musée National Picasso, Paris) shows the fifty-seven-year-old as the embodiment of the modern master, with palette and brushes in hand.

The artist's close examination of portraits and genre paintings inspired a startling community of traditional male characters and 'types' in his work. In his 'Portrait of Jaime Sabartés', 1939 (Museu Picasso, Barcelona), Picasso recasts his long-serving secretary, who had followed him from Barcelona, in the guise of a Spanish nobleman of the 16th century. In sharp contrast, the icon-like 'Child with a Dove', 1901 (on loan to the National Gallery from a private collection), harks back to traditional images of the Christ child, but in style it echoes Gauguin and Van Gogh.

An extraordinary painter of women, Picasso continually celebrated female beauty through the representation of the nude. The artist adapted the conventions of this well established genre to his own vocabulary and successive styles. Like Ingres, Picasso looked back to the purity and monumentality of the antique, but exaggerated and transformed it, as seen in his masterly 'Large Bather' of 1921 (Musée de l'Orangerie, Paris).

His late bold reclining nudes, such as 'Nu couché', 1969 (private collection) radically challenged a tradition which is strongly represented in the National Gallery by masterpieces such as Velázquez's 'The Rokeby Venus', 1647-51.

Meanwhile, the monumental 'Women at their Toilette', 1956 (Musée National Picasso, Paris) attests to the remarkable influence of Degas's bathers, such as the National Gallery's 'Combing the Hair' of 1896.

Still lifes

A section on the artist's arresting still lifes, including 'Skull with Jug', 1953 (Nahmad Collection, Switzerland), reveals a highly informed dialogue with artists like Chardin, Goya and Delacroix, as well as more contemporary figures, notably Van Gogh, Gauguin and Cézanne. In the cubist 'Still Life with Glass and Lemon', 1910 (Cincinnati Art Museum), Picasso fragments form into a riot of intersecting planes, without ever losing sight of the tradition of still-life painting from which it is drawn.

The exhibition makes subtle reference back and forth between the works of Picasso and the National Gallery's own incomparable collection of Old Master paintings, which is on display in the main rooms of the Gallery upstairs. Visitors to the exhibition will be invited to re examine the National Gallery's collection, as it were, through the eyes of Picasso.

'Picasso: Challenging the Past' has been organised jointly by the National Gallery, London and the Réunion des Musées Nationaux, Paris; with special support from the Musée National Picasso, Paris; in conjunction with the Picasso et les maîtres exhibition in Paris, organised by the Réunion des Musées Nationaux, the Musée National Picasso, the Musée du Louvre and the Musée d'Orsay.

The Winter Garden at the Landmark

By Hélène Maurice

The Landmark Hotel in Marylebone Road, London used to be a grandiose Victorian hotel serving Marylebone Station situated over the road. It features a clock tower and a large central courtyard for horse carriages, nowadays enclosed by a gigantic conservatory roof enclosing the Winter Garden restaurant. Step inside the hotel foyer from the southern side and feel transported to an exotic and enchanted place.

Food and wines

Overall the 'à la carte menu' is appetizing and should cater for every taste. We went for a three course meal, but in fact the starter was superfluous as we had the pleasant surprise of being served a vegetable-fish soup as an appetiser.

The size of the portions was well-balanced and overall we enjoyed our food, which was well presented and cooked. My main course was poached Scottish salmon with pan-fried langoustine and my partner had old spotted Gloucester pork belly in cider sauce.

Our desert warm pear tart with Cornish clotted cream was light and tasty but it was puzzling to see as a choice a 'trio of homemade doughnuts'. Not really the sort of selection I expect in such a place.

For the pause café, we sat on one of the sofas situated on each side of the room. It gives you the opportunity to embrace the magnitude of the courtyard.

The wine list is impressive but expensive. My partner only drank a glass of French red wine as I fancied a non-alcoholic cocktail. It was refreshing but lacked body.
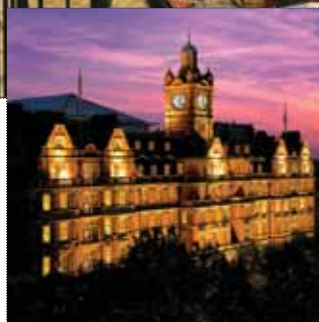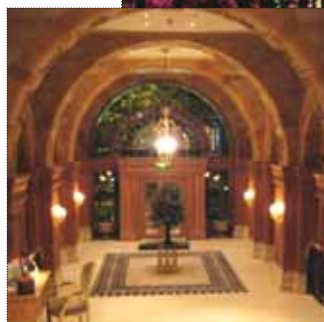
Service

Unobtrusive, diligent and welcoming.

Atmosphere

A piano played at intervals on the above floor during the evening. It added a *je ne sais quoi* to the subdued magical ambience. The tables dispersed among fake palm trees reaching for the dome of the conservatory are arranged in such a way that you are not conscious of the other parties. The lighting is restrained and the background sound seems to evaporate into the height. The only drawback is the rising heat which gives the feeling of being *al fresco* like a terrace.

Verdict

Overall the food is enjoyable but does not match the price. The décor is what you pay for, we will definitely go back.

Rating: 4 stars out of 5

Brunch at the Landmark

The Landmark also offers a brunch buffet with live jazz on Sunday lunchtimes. It still takes place in the Winter Garden but on the first level overlooking the restaurant. The experience is as enjoyable and memorable. There is a vast choice of food and desserts freshly prepared. The presentation is pleasant to the eye and the service is extremely friendly. The last glass of wine is served at 3pm but you are welcome to stay until 4pm, leaving you some time to digest and to relax. At £70 per head It does not come cheap but if you would like to spoil someone, be tempted!

THE LANDMARK, LONDON

The five star Landmark hotel has a fascinating history dating from 1899, built as the last of the great railway hotels during the Golden Age of steam.

On entering the gothic, Grade II listed building, The Landmark's soaring eight-storey, glass-roofed central atrium forms a unique focal point. Over 100 years ago, this was an uncovered courtyard used for horse-drawn carriages. It has now been transformed into The Winter Garden Restaurant, which is an atmospheric place to enjoy breakfast, lunch, dinner and afternoon tea.

In The Winter Garden Restaurant, a delicious menu created by the Head Chef, Xavier Mouret, offers guests a wide selection of classic British dishes. The afternoon tea is a sumptuous affair and visitors from all around the world come to the hotel to while away an afternoon dining under the opulence of the spectacular palm trees.

For a more intimate setting, the "twotwentytwo" restaurant and bar will launch in April 2009, offering the perfect place for drinks, lunch and dinner.

The Landmark's chic Mirror Bar offers a wide range of champagnes, cocktails, whiskies and cognacs. With its contemporary design and discrete and efficient service, the Mirror Bar has fast built a reputation as a place to "see and be seen" amongst London's fashion set.

The Landmark London's 300 elegant guest rooms and suites are some of the largest in the Capital. These blend sophisticated and luxurious décor with the latest technology, such as interactive television systems that include Playstations and high-speed wireless internet access. Many of the bedrooms overlook the beautiful atrium, providing stunning views at all levels.

Following a major refurbishment, The Landmark's Spa & Health Club launched in June 2007. Offering a tranquil environment and modern design, it features a 15-metre pool, sanarium, whirlpool, steam rooms, a fully-equipped gymnasium, and ESPA beauty treatments and massages. Additionally, the hotel has a hair and beauty salon.

The Landmark is well-known for its Champagne Brunch, where contemporary jazz musicians play live while guests enjoy a buffet lunch accompanied by unlimited Champagne. The Champagne Brunch is available every Sunday and is priced at £70 per person.

Situated in fashionable Marylebone, the hotel is located close to the exclusive boutiques, designer restaurants and interesting markets of Marylebone Village. Regents Park and tourist attractions such as Madame Tussauds are only a short stroll away.

Room prices are from £265 excluding VAT during the week. Weekend rates start at £239 plus VAT including breakfast, and a welcome bottle of Champagne.

The Landmark London
222 Marylebone Road, London
NW1 6JQ

Reservations on +44 20 7631 8000
or visit www.landmarklondon.co.uk

Eucalyptus, the healing tree

Eucalyptus essential oil and infusions are a good remedy for colds. Its overpowering scent is a wonderful decongestant for blocked sinuses. To do so, sprinkle your pillow or handkerchief with a few drops but beware, don't rub your eyes with your fingers or you will shriek with pain as it is also a very powerful antiseptic.

Eucalyptus globulus (more than 600 species are listed) originates from Australia where it can reach up to 155 metres high. Thankfully in Europe it will only grow up to around 45 metres: still quite an impressive height! If you have planted one in your garden you will have noticed how fast each year it grows and how important it is to control it.

Australian Aborigines have always recognised its healing power and used it to fight fever and to heal skin wounds. The famous British explorer, Captain James Cook, introduced it to Europe around 1770 following his voyages in the Pacific Ocean.

The eucalyptus tree is an evergreen. Its leaves are blue-grey and its bark, often covered in white powder, tends to peel off. In summer, it produces clusters of small creamy flowers. The leaves are collected to extract their powerful chemicals.

But as for any natural remedies, it is essential to treat the healing prowess of the eucalyptus with respect and know the contra-indications.
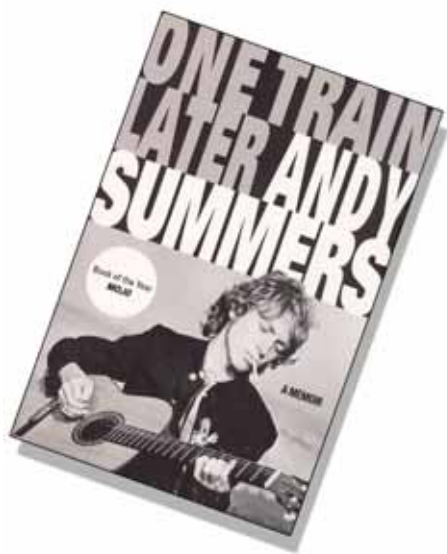
Book Reviews

One Train Later

by Andy Summers
Review by Peter Robinson

Andy Summers is guitarist with the recently reunited mega rock band of the seventies and eighties, The Police. They formed amidst the punk explosion of the mid seventies when musicianship was looked down on in favour of raw energy. Summers had to hide his musical credentials but from the first album his unique style was apparent on a customised battered Telecaster, matching intelligent melodies of light and shade with distorted pop power chords.

Summers describes a childhood infatuated with the guitar when he began to draw on a variety of styles which differentiated him from the crowd. Not for Summers the three major chord trick, favouring ninths, suspensions and extensions he influenced a generation with a sense of atmospheric space, accentuated by his use of echoplex and phasing effects. Just consider two of their hits which bookended their career and see how they were a curve above the crowd, creating new, yet absolutely pop rhythms. Listen to the original arpeggioed and nine chords riffing all the way through Message in a Bottle and the melancholic ninth chords of Every Breadth You Take. Of course Sting was a brilliant song writer with his finger on the pop pulse, an original bassist and wholly distinctive singer and Stewart Copeland came up with original, off-the-beat drumming, but The Police were the sum of their parts, and when you are a threesome every part counts.

Summers went through a diverse range of gigs from the sublime to the ridiculous, backing Neil Sedaka and playing in psychedelic bands dressed in white suits and the New Animals. "One train later" and he might not have joined The Police. He missed his train to London's Oxford Circus and happened to run into Stewart Copeland and discussed replacing their existing guitarist. The rest is rock history.

My Word is Bond
The Autobiography

by Roger Moore with Gareth Owen
330pp, Michael O'Mara books, £18.99
hard back
Review by Hélène Maurice

Who has not heard of 'Bond, James Bond' and associated Roger Moore with this quintessential English agent? Roger Moore has finally published his autobiography in a straightforward, witty and feel-good book. I remember watching him mostly in *The Persuaders* where the dry humour of his interaction with Tony Curtis always enlivened the predictable plots. His humour is evident throughout the book.

The story starts with his birth in October 1927 in south London. From the first line, the tone is set: light and self depracating. He depicts his childhood surrounded by two loving parents who he admired, especially his dad, 'a real jack of all trades,' a policeman but also an amateur magician, musician and actor. This instilled in Moore his vocation for acting. The reader is taken step by step through the war years as a child evacuee who took life as it came and his struggle to become a famous actor working for studios in London and Metro-Goldwyn-Mayer and Warner Brothers in Hollywood. His international fame finally came in 1973 with the premiere of his first Bond film *Live and Let Die*. Sean Connery was a hard act to follow but Moore completely reinterpreted the role with his humourous, ironic, post-modern eye brow raising. Roger Moore is a loveable character who can talk about himself with some irony and whose entertaining, mischievous anecdotes punctuating his life bring back memories to people of his generation of long gone actors and actresses such as Richard Burton, Terry-Thomas, Elisabeth Taylor and David Niven.
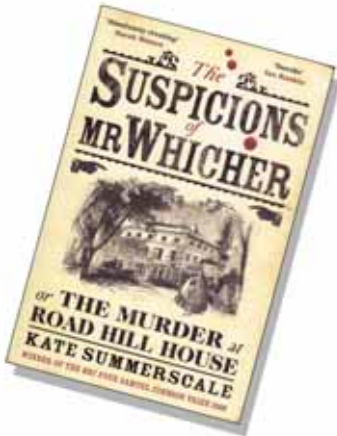
But if you have a soft spot for this actor and would like to know more about his personality and his work for UNICEF don't hesitate: it is a very enjoyable read.
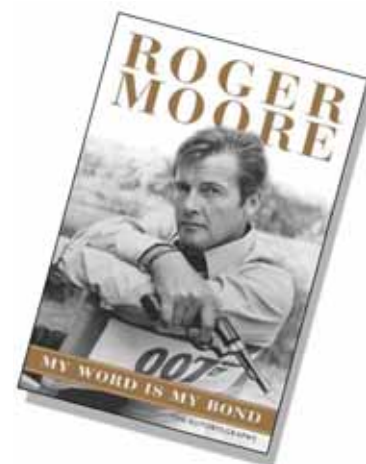
The Suspicions of Mr Whicher or The Murder at Road Hill House

By Kate Summerscale
304pp, Bloomsbury Publishing, £11.99 paperback
Review by Hélène Maurice

No one ever knows which books will become best sellers. If you had suggested that a faithful historical retelling of a nineteenth century murder case would hit the best sellers list and rival the celeb biogs you might have been considered mad. Yet that is just what Kate Summerscale did with one of the most successful books of the year. She relates in a very fluid, straightforward style, the events and enquiry regarding the gruesome murder of a little boy in a comfortably-off Wiltshire family in June 1860. But of course it's the way you tell a tale that is most important and Summerscale mirrors the sensation novel of the nineteenth century with its lurid love of macabre detail. So despite mainly taking place in Road Hill House and its surrounding environs the story is engrossing.

As the reader progresses through the plot, one learns about the creation and growth of the first Scotland Yard detective force in the early 1840s and the rise of its main detective Mr Whicher. Although the murderer is discovered quite early on, despite no substantial proof by Detective-Inspector Whicher, one has to wait quite a while for the confession and guilty verdict. It is the kind of narrative that grips the reader and keeps one spellbound to the last page. The clever book cover mimicking the sensation novel of the nineteetnh century, the extracts of the case seen through the various newspapers of the time, the illustrations and the references to contemporary writers such as Dickens, Edgar Allan Poe and Wilkie Collins combine to recreate the ambiance of the Victorian age.

# Three Days of Rain, Apollo Theatre - Theatre Review

By Hélène Maurice

The first act of this intriguing American play by Richard Greenberg takes place in an unoccupied loft space in downtown Manhattan in 1995 then in the second act goes back in time in 1960 still in the same loft. Clever, subtle sound and visual effects create a dark, broody atmosphere remin-iscent of *film noir*.

The cast has only three actors but all produce tremendous performances throughout: James McAvoy (Walker/Ned) most recently seen in the film, *Atonement* is the central character of the play. He is supported by Lyndsey Marshal (Nan/Lina) who especially shines in the second act with a powerful presence on stage and Nigel Harman (Pip/Theo), from *Eastenders* whose performance blows you away, particularly in the first act where he delivers his lines wittily, with power and gusto.

The play revolves around these six characters and family conflicts. The first act reunites the two children, Walker and Nan, of the deceased Ned and the son, Pip, of his late best friend, Theo. They retrace their feelings about their parents, their marriage who had such desperate personalities and their involvement with Theo. The house, assumed to have been designed by Theo, but owned by Ned, becomes a source of conflict between the three young people when Theo inherits it and divulges secrets from the past. Hints of what the second act will reveal are skilfully anticipated.
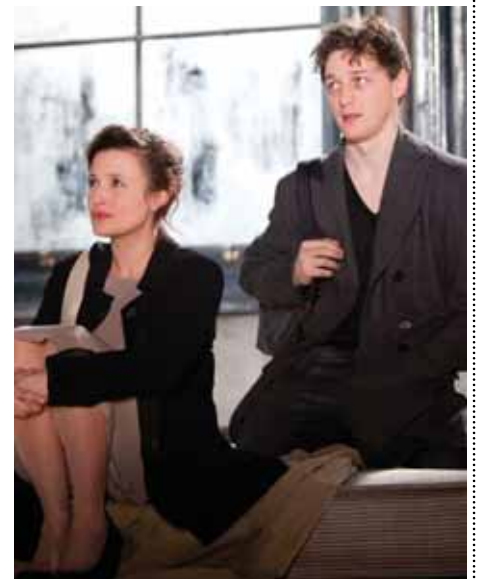
In the second act, the three actors play their respective parents in their early life before they settled into marriage. The audience is confronted with betrayal, love and despair. The dénouement enlightens the first part of the play and the title refers to an entry in a lost diary. The matinée was packed and the cast won a standing innovation which I think was well deserved. The funny, witty dialogue was well directed and the performances very strong.

Research Papers

Contents

TESTING ANALOGICAL PROPORTIONS WITH GOOGLE
USING KOLMOGOROV INFORMATION THEORY

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Abstract

Analogical reasoning is considered as one of the main mechanism underlying creativity. "Thinking out of the box" allows the paradigm shift essential to a creative process. More common is the concept of analogical proportion ("2 is to 4 as 4 is to 8" or "view is to viewer as read is to reader") which can be described within an algebraic framework. When it comes to concepts ("engine is to the car as heart is to the human" or "electrons are to the atom's kernel as planets are to the sun"), we need to investigate a new way to understand this analogical ratio. In this paper, we take our inspiration from the formal framework of information theory to propose a novel approach to interpret analogy between concepts. Using Kolmogorov complexity as a backbone providing a clear semantics, we give a practical interpretation for analogy between words viewed as labelling concepts. With the help of Google considered as a linguistic resource, we provide an implementation of our definitions: our first experiments show that the accuracy of our definition is quite acceptable and justifies our approach.

Introduction

Despite its specific status, analogical reasoning can be considered as a very common reasoning process and has the ability to shortcut long classical reasoning leading to the same conclusion. This kind of reasoning is commonly used in the day-to-day life and is much more powerful than it appears at a first glance. In fact, a lot of scientific discoveries have emerged thanks to a kind of analogical reasoning! It is largely accepted that analogy is the basis for creativity as it allows correspondence between different paradigms (see (Goel 1997; Sowa & Majumdar 2003)). Analogical reasoning is based on the human brain ability to identify "situations or problems" a and c, and then "deduce" that if b is a solution in the problem a, then some d, whose relation to c is similar to the relation between a and b, could be a solution to the case c. Analogical proportion is usually denoted as
 a : b :: c : d and should be read as "a is to b as c is to d".

In order to implement analogical learning i.e. looking for x such that, a, b, c being given, the predicate a : b :: c : x becomes true, it is necessary to have a clear interpretation of the predicate, at least on the universe E we deal with. For instance, when the universe is the set R of real numbers, the truth of a : b :: c : d is generally interpreted as a × d = b × c. In the field of AI, analogy-discovering programs have been designed for these specialized areas where at least a minimal algebraic structure is underlying. The analogy "heart is to the human being as engine is to the car" is more at a linguistic or conceptual level: to cope with such proportions, we cannot rely on a simple mathematical structure. In the universe of concepts, the conceptual graphs (CG) of J. Sowa are an appealing framework: in that case, we have to encode the given core of knowledge using CG then, with the help of a structured linguistic database (like WoldNet for instance), we can discover analogies. VivoMind analogy engine (Sowa & Majumdar 2003) has been implemented with this idea in mind. In some sense, a structure is brought to the core knowledge from which we can start to work with. In this paper, we want to investigate a method avoiding any pre-processing of the universe we deal with. Our aim is to deal with words representing concepts and whose semantics is given in a linguistic context: we want to take advantage of the semantics of the words, coming from the human language rather than their algebraic properties when considered as string over a given alphabet. More precisely, every word a carries an "information content" that is formally defined via its Kolmogorov complexity K (a). This complexity is an ideal natural number and has to be estimated: in order to achieve this estimation, we use Google as a kind of universal linguistic database. This information content is the basic brick we need to investigate analogy for concept. We start from a simple definition, a kind of basic common agreement on which we can build up a clear interpretation mechanism: a : b :: c : d is true if a and b agree and disagree the same

way c and d agree and disagree.

This agreement/disagreement is just defined via the Kolmogorov complexity, capturing the information content, of b conditional to a, and is practically estimated thanks to the Google database. Starting from our interpretation, we check with a sample of well agreed analogical proportions that our definition is relevant. The remaining of our paper is organized as follows: in the next section, we provide a brief overview of analogy and the logical and set theoretic interpretations. Then we introduce the basic notions of Kolmogorov complexity and the proper- ties we need to address our problem. The following section is dedicated to provide a Kolmogorov based interpretation for analogy between concepts represented as words. In our experimental section, we establish the way we can get, using Google database, a kind of estimation of the "informative content" of a given word, with the backbone of Kolmogorov theory. In this section, we describe our experiment protocol and results using Google. Finally we investigate future works and we conclude.

Analogy: brief review

Let us start with the standard notation a : b :: c : d of an analogical proportion, which can be read as a is

to b as c is to d, or a is to b what c is to d. Generally speaking, this reading suggests that there exists some relation, say R, such that a is in relation R with b and similarly c is in relation R with d. It is agreed (see, e.g. (Lepage 2001)) that analogical pro- portion should obey the two classical postulates:

1. a : b :: c : d =? c : d :: a : b (symmetry)

2. a : b :: c : d =? a : c :: b : d (central permutation)

The two first postulates entails the following noticeable property (just apply central permutation two times and symmetry in between)
    a : b :: c : d =? b : a :: d : c

Dating back to Aristotle's time, these postulates are supposed to capture the fundamental properties of analogical proportion. Clearly, the second postulate is the strongest one, and is in some sense specific of analogical proportion, and may be more problematic for more general analogical statements, since it suggests that there is also some relation, say S, such that a is in relation S with c and similarly b is in relation S with d. In case of analogy between numbers, a ratio-based reading is natural as for instance in the example 3 : 6 :: 4 : 8 and obviously agrees with

the idea of central permutation. This is also the case with a difference-based reading for a numerical analogy such as 13 : 15 :: 17 : 19. When it comes to geometry, a, b, c and d are vectors or points in IR2 : to be in analogical proportion, they have to be the vertices of a parallelogram and then d(a, b) = d(c, d) and d(a, c) = d(b, d) (where d is just the Euclidean distance).

These examples agree with a reading of a : b :: c : d as a can be changed in b in the same way c can be changed in d, here by applying the same function. Syntactic analogies such as "write is to writer as drive is to driver", where r is added to the chain of letters that constitutes the label of a word, are of the same species. Note that "write : drive :: writer : driver" holds as well here, with the less straightforward change, w is changed into d and t into v.

The following postulate is usually added a : b :: c : d entails b : a :: c : d. Note that if we enforce this negative property, it rules out "superficial" analogies based on synonymies of labels such as " nauseated : queasy :: star : celebrity". Taking the example of the analogical state- ment "beer is to Germany what wine is to France", it is clear that on the one hand "Germany is to beer what wine is to France" would sound awkward; on the other hand such an analogy looks more interesting than the previous example, since it is based on implicit similarities between Germany and France and between beer and wine.

Although the existence of a mathematical structure (e.g. semi-groups, words over alphabets, lattices or trees) that may underlie the labels a, b, c and d of an analogical pro portion should play an important role in the type of relations that may hold between them (see (Stroppa & Yvon 2005) for instance), set-based and logical modellings of analogical proportions reveal the basic structure that is at work in a : b :: c : d. Indeed, one of the simplest ways for providing a generic interpretation is to consider the items a, b, c, d as represented by finite subsets A, B, C and D

respectively in a given universe X . A definition first given in (Lepage 2001) (see also Stroppa & Yvon, 2005) is that a : b :: c : d holds if a is transformed into b and c is transformed into d by adding and deleting the same elements. Namely,
Definition 1- Let A, B, C , D be subsets of a referential X (\ denotes the set difference operator):

$$(A : B :: C : D) \text{ iff } (A \setminus B = C \setminus D) : (B \setminus A = D \setminus C)$$

A logical counterpart of this definition has been recently proposed by Miclet & Prade (2008), viewing a, b, c and d as binary truth values

$$(a : b :: c : d) \text{ iff } ((a ? b) ? (c ? d))?((b ? a) ? (d ? c))(1)$$

Note that the above expression, involving the operator with Parity 4, parallels the difference-based view of the analogical proportion. This covers three basic schemata obeying the above postulates (three others can be obtained by exchanging 0 and 1, i.e."false" and "true", namely

1. (1 : 1 :: 1 : 1)
 (and dual (0 : 0 :: 0 : 0))
2. (1 : 1 :: 0 : 0) (dual (0 : 0 :: 1 : 1))
3. (1 : 0 :: 1 : 0) (dual (0 : 1 :: 0 : 1))

It can be checked that the expression (1) takes the value 1 only for the three above sequence (and their duals exchang- ing 0 and 1). As can be seen, the first two cases correspond to situations of similarities of truth degrees a and b, as well as c and d, while the third case exhibits a parallel directed change from true to false between a and b, and c and d. In-terestingly enough the sequence
a : b :: c : x, where a, b, c

are known and x is unknown, can be made true in a unique way with
a : a :: b : x =? x = b
(identity determinism)

This expresses that pure identity can only be in analogy with pure identity.

But, this is clearly not a very interesting case in practice, and more generally it is not expected that x = (a ? (b ? c)) in order to obtain one of the three above sequences, if and only if ((a ? b) ? (a ? c)) is true (a ? b covers the first two cases, and a ? c the last one). This can be used as the basis for a case-based extrapolating mechanism (Stroppa & Yvon 2005; Prade, 2008) by extending the above equation (1) component wise. Namely, if A, B, C and D are vectors with n components that describe situations in terms of the truth values of n attributes, assuming that A, B, C are fully known cases, while only the k first components of D are known, the n ? k can be computed as completing $a_j : b_j :: c_j : x_j$ for k < j ? n, provided that analogical proportions hold for $a_i : b_i :: c_i : d_i$ with 1 ? i ? k.

Thus, testing if some analogical proportion a : b :: c : d holds supposes in the above approaches to have an explicit representation of the situations referred to by a, b, c and d. In this paper, we try another route where representations would be only implicit and summarized in terms of information amounts, noticing that we are interested in what "information" is common to a and b (resp. c and d), and more importantly in what information is added/deleted when "going from" a to b or from c to d. So if we are able to properly define this notion of information for words representing concepts, it could be the basis for a quantitative information-based interpretation of analogy between concepts (like beer, wine, Germany and France for instance). This is why we turn to information theory to get the tools we need.

Information

There is no unique way to provide a mathematical meaning to "information". Generally, to provide a numerical measure of this notion, we have to turn to probabilities and statistics. It is not our aim in this paper to fully investigate the field of information theory and we just give brief description. Roughly speaking, we can distinguish between 2 theories:

1. The Kolmogorov work also known as algorithmic complexity theory, provides an absolute definition of information: the main concept is Kolmogorov complexity (or algorithmic entropy) which maps individual strings (or sequences of symbols) to natural numbers.

2. Claude Shannon's theory also known as "information theory" provides a definition of information in the context of a communication process. The main concept is Shannon's entropy or simply entropy which maps random variables to real numbers.

In this paper, we focus on the Kolmogorov framework because this kind of absolute definition is exactly what we are looking for. A good introduction to this theory is contained in (Kolmogorov 1965) with a solid treatment in (Bennett et al. 1998; Li & Vitanyi 1997). We just provide a short intro- duction below .

Kolmogorov theory: brief overview

Developed in the late 1960's, Kolmogorov complexity theory should be seen as the result of the works of Andrei Kolmogorov, Ray Solomonoff and Gregory Chaitin. The aim of the theory was to give a formal meaning to the notion of 'informative content'. For a given string x,

Kolmogorov complexity K (x) is a numerical measure of the descriptive complexity contained in x. In this paper, we simply give some notations and intuitions that are useful to understand our work. We start from a Universal Turing Machine U , with an input tape containing a string y, a program tape containing a string p and an output tape. Universal simply means that any other machine can be simulated with U : following Church's thesis, there are such machines. When we start to run p on U with y as input, if the machine halts, we have a finite string x on the output tape and a finite part of p, pr has been read. It is convenient to adopt a functional notation with:

$$U (y, pr) = x$$

It means that there is a way to transform y into x using pr or any program with pr as prefix. Another way to put the things is to say that pr can reconstruct x with the help of auxiliary data y. Then the conditional Kolmogorov complexity of x relative to y is: Definition 1

$$K (x|y) = \min\{|pr| : U (y, pr) = x\}$$

In some sense, K (x|y) represents the shortest way to go from y to x. Finally the Kolmogorov complexity of x is just Definition 2

$K (x) = K (x|²)$ where ² denotes the empty string.

Given a program p such that |p| = K (x), able to produce x from U with no auxiliary string, it can be understood as the essence of x since we cannot recover x from a shorter program than p. It is thus natural to consider p as the most compressed version of x and the size of p, K (x), as a measure of the amount of information contained in x. With this viewpoint, K (x|y) measures the amount of information we need to recover x from y: it does not matter here if this information has to be added or deleted. K is extended to pair of strings simply by putting that K (x, y) is the length of the shortest program which can output the pair < x, y > and then halt. Finally, a distance over the set of finite strings can be deduced, the so-called "information distance" (Bennett et al. 1998):

Definition 3
$$\max(K (x/y), K (y/x))$$
$$d(x, y) = \min(K (x/y), K (y/x))$$

These definitions are sufficient for our aim: we have a clean definition for "information content". But since K is an ideal function, we have now to focus on a way to estimate its values.

Universal distribution

We have to go back to the works of Ray Solomonoff (Solomonov 1964) whose idea was to define a kind of universal distribution over all possible objects to overcome the problem of unknown prior distribution within Bayes' formula. His idea was to considered 2?K (a) as the unknown a priori probability of a when nothing else is known. In fact, in order to define a true probability measure, this definition has to be refined using specific constraints on the type of authorized programs (reduced programs)(Kolmogorov 1965; Li & Vitanyi 1997; Bennett et al. 1998).

With this in mind, the application a ? 2?K (a) is a probability distribution over the set of finite strings {0, 1}N .

This technical definition could obviously be considered as a modern setting of the well known Occam's

razor principle. With our point of view, we can understand this number as the probability for a to appear (i.e. in that case, to be produced by a Turing machine). As it is quite clear that the log inverse of 2K (a) is just K (a), any process generating strings and whose mass distribution is known can be used as a Kolmogorov complexity estimator: if p(a) is the probability of a to be generated by the process, then an estimation of the Kolmogorov complexity of a is just log(p(a)). It remains for us to find out a process generating a known mass distri bution over strings, process which could be relevant for our purpose. It becomes obvious that Google is a strong candi- date as we will see in a forthcoming section. But now we have to focus on how to interpret analogical proportion using our notion of "information content". This is the aim of the next section.

Kolmogorov model for analogy

Back to our previous notation, a : b :: c : d is considered as a propositional formula which can only be true or false in a classical binary framework. As previously shown, a standard way to provide a semantics for a : b :: c : d is to take into account the structures and operators available on the semantics domain/codomain. When it comes to concepts, we cannot simply rely on a particular structure allowing us to apply in a straightforward manner the techniques above. Let us start with quite obvious and simple ideas extracted from the definitions above:

- we work on flat finite binary strings representing concepts. a, b, c and d are simple strings and we have only access to their information content via K

- the common understanding for "a:b::c:d" to be true is that the way a and b agree/disagree is the same as for c and d.

Using the Kolmogorov framework previously described, it makes sense to consider K (b/a) as a measure of the quantity of information we have to handle (add or remove or transform) to go from a to b. We have now several options:

1. We can interpret analogy between concepts (represented with words) as the exact counterpart of the set theoretic definition considering the information theoretic translation of b \ a as K (b/a). Then a : b :: c : d holds iff:

[K (a/b) = K (c/d) ? (K (b/a) = K (d/c))] (I1)

This is obviously a stronger condition than d(a, b) = d(c, d).

2. Taking into account the central permutation postulate, generally required from a realistic interpretation of analogy, we can interpret the fact that a : c :: b : d should holds as well then a : b :: c : d iff:

(I1) ? [(K (a/c) = K (b/d)) ? (K (c/a) = K (d/b)] (I2)

If we adopt a kind of geometrical view, it means a, b, c, d are the vertices of a parallelogram since I2 implies d(a, b) = d(c, d) and d(a, c) = d(b, d). To validate the formula, we have now to estimate K : we explain below how we do it using Google and we present the results of our experiments.

Google implementation and first results

In this section, we try to validate the ideas described above. We use the same kind of strategy as in (Cilibrasi & Vitanyi 2004).

Google mass distribution

Now that we have a numerical interpretation of analogy us- ing Kolmogorov complexity, we have to use the idea previously developed. Since our words (or strings) are just syn- tactic representations for concepts, it is relevant to deal with a text corpus where these words get their meaning. The most general knowledge base is simply the world wide web: this is as well the biggest one with more than 16 billions indexed web pages. And Google provides a very effective tool to mine this base. When we are looking for a word a, Google's engine returns as results, not only the list of web pages containing this word, but also the number n of such pages. If we divide this number by the total number M of pages indexed with Google, we get the frequency p = n/m of this word in Google database. Considering this frequency as a probability, and using the log inverse function, we get ?log(p) as an estimation of the Kolmogorov complexity of this word.

Let us put it more formally, following the lines of (Cilibrasi & Vitanyi 2004). Given a word a, we can denote w(a) = {w ? X | a ? w} the set of Google indexed web pages containing a: this is an event over the universe X of all the Google indexed pages. Then p(a) = |w(a)|/M , where M = |X |, is the probability of the event w(a) if we consider every page equally weighted. So we are done for simple Kolmogorov complexity estimation K (a) using ?log(p(a)).

Of course, we have to deal with conditional complexity i.e. K (b/a) instead of simple complexity K (a). Let us examine this issue. If we have 2 words, a and b, we can consider w(a, b) = {w ? X | a ? w, b ? w} = w(a) ? w(b) then the join probability p(a, b) follows as |w(a, b)|/M . We are now allowed to define the conditional probability as usual p(b|a) = p(a, b)/p(a): this is the probability for b to appear on a web page knowing that a belongs to this page.

It would be tempting to estimate K (b/a) as log(p(b/a). Following our reasoning, log(p(a, b)) is an estimation of K (a, b) and back to Kolmogorov theory, the only equality we have is (see (Bennett et al. 1998) for a detailed analysis)

K (a, b) + O(log(K (a)) = K (a) + K (b/a)

It is now clear that if we decide to approximate K (b/a) with ?log(p(b/a)), it means we neglect the O(log(K (a)) term in the previous equality. For the sake of simplicity, this is what we implement. We are now equipped to start our practical experiments.

Remark: In this paper, we approximate the formal values of K and we go for the simplest way to check out the validity of our interpretation. The problem of how our computation approximates K (b/a) if ?log(p(a) approximates K (a) is not our primary concern at this step.

Data

In term of testing data, it has been quite simple to get a set of positive examples i.e. a list of well agreed analogies: we take our source from http://www.teachersdesk.org/vocabaal.html and we add some more to build up a list of 50 analogies. Some of them are quite syntactic: read is to reader as lecture is to lecturer and can be considered as analogical proportions since, in that case, we expect read is to lecture as reader is to lecturer to be true as well. Others are more conceptual like heart is to human as engine is to car. On the other side, sit is to sat as bring is to brought or man is to men as sheep is to sheep rely on grammatical rules and cannot be considered as "algebraic" since they are exceptions to the standard grammatical rules. Because they are not conceptual analogies, it is likely they will not be identified with our method. It is not so easy when it comes to find out a set of negative examples i.e. a list of "well agreed non-analogies". To build up such a set, we have implemented 2 strategies:

- Starting from an analogy a : b :: c : d in our set of positive examples, we switch the 2 first items and we get b : a :: c : d which is not considered as an analogy. We get a set of 50 negative examples.

- Starting from 2 analogies a : b :: c : d and a0 : b0 :: c0 : d0 belonging to different universes, we exchange d and d0 : for instance starting from the previous examples, we get 2 "non analogies": read is to reader as lecture is to car and heart is to human as engine is to lecturer. When the result a : b :: c : d0 still looks like an analogy, we just switch one item against an extra word not belonging to our base and insuring we do not have an analogy. Doing so, we get a second list of 50 counter-examples of analogies.

To get a better understanding how to tune the system, we distinguish the 2 previous sets of negative examples.

We call them "random negatives" and "permut negatives". Finally we got a testing set of 150 items (50 positive analogies and 100 negative analogies) against which we check our diverse interpretations.

Implementation protocol

In terms of implementation, Google is our main database and it is relatively easy to access Google API to implement an AJAX website. It is well known that the JavaScript mathematical functions are not as precise as the C libraries but they provide a very convenient and flexible way to deal with a web content. For the cases we have investigated, we feel it does not result in much distortion with regard with the expected answer. Due to the dynamic nature of the web, the values of the diverse counters are subject to slight variations which do not affect our global result.

It is interesting to note that using pollution river, "pollution river", "pollution"+"river" provide slightly different results in term of occurrence's number. We always use the full notation +"pollution"+"river" to have a uniform protocol. More irritating is the fact that Google search is not "commutative" in the sense that the search for +"river"+"pollution" gives 1,430,000 but +"pollution"+"river" gives 11,000,000 (of course the ranking order is different): the reason is that Google makes use of n-grams to efficiently retrieve in its databases and in that case, order of word is relevant. To overcome this issue, we systematically run a search for both sequences and con sider the number of pages as the maximum of the 2 results: so we choose 11,000,000 as |w(river, pollution)| which gives a frequency of |w(river, pollution)|/M and an estimated Kolmogorov complexity K (river, pollution) of ?log(|w(river, pollution)|/M).

Finally, since from a practical viewpoint, strict equality cannot be ensured, we accept equality modulo ² where ² is a small positive threshold.

Google experiments

We have performed a lot of tests, following the previous protocols and tuning diverse thresholds. We summarize here this process. Using the previous test set, it is not surprising that our first attempt using I1 gives quite mixed results. We get the following confusion matrix.

I1 : Despite this is definitely not satisfactory, we observe that our simple interpretation of analogy makes sense. But I1 definition does not properly identify analogies. This is not completely unexpected because, with this definition, we summarize a huge amount of information linking a to b with only 2 numbers. It is then time to check with I2 which integrates the idea of central permutation and increases the quantity of information taken into account. This provides the following confusion matrix:

I2 :with a false positive rate of 25% and a false negative rate of 24%. Despite the fact that our results are definitely better than the previous ones, we are still not completely satisfied. After a careful examination of our results, it appears that:

- First of all, we generally fail to provide the correct answer when a polysemic word appears. Examples are novel and view. It means for instance that occurrences of view (more than 10 billions pages) are not related to occurrences of glasses (only 58 millions pages). In that case, our computation relying on Google relative frequencies is meaningless. So we replace polysemic examples with non polysemic examples: we get a very similar test set but with no polysemic words.

- With the randomly built analogies, we observe mixed results. We have to come back to the initial very meaning of analogy: to estimate if a : b :: c : d holds, we need at least a relation between a and b, and then to compare this relation with a relation between c and d. But in the case where a and b are completely unrelated, very few web pages contain both words a and b:

in other words, it is extremely difficult to get b starting from a and vice versa. In that case, we have to consider a : b :: c : d is not an analogy whatever our interpretation. Nevertheless, our calculations apply: we compute p(a/b) and p(b/a), we get probabilities close to 0. And the log inverse of these numbers are in a range which is not meaningful.

If we are lucky enough to have I 1 and I 2 both holding, we interpret a : b :: c : d as an analogy which is obviously wrong. We do not change our interpretation I2 but we just eliminate these cases by implementing a simple probability threshold about every pair of items belonging to a, b, c, d. Now just have a look on our final confusion table: I20 :Obviously, now the results are more in accordance with our intuition. It should be clear that, due to the uncontrolled nature of Google, we have to accept imperfect results.

A brief comparison with Jaccard distance

Let us recall the Jaccard index for 2 words a and b belonging to a given corpus of texts X (in our case, the set of Google indexed pages), using the same notation as above:

Definition 1
$$J(a, b) = \frac{|w(a, b)|}{|w(a)| + |w(b)| ? |w(a, b)|}$$ (Jaccard index)

dJ (a, b) = 1 ? J (a, b) (Jaccard distance)

One of the interests of this formula is the fact that we do not need to estimate the total number of Google indexed pages. Furthermore, the Jaccard index is symmetric (J (a, b) = J (b, a) so there is no need to add more information. It is rather appealing to give a try to this simple definition using our final clean examples set. We first tried to interpret a : b :: c : d as (J (a, b) = J (c, d)) ? J (a, c) = J (b, d)

We first got bad results because of the very small numbers we had to deal

with. So we move to log function to get more realistic numbers: a : b :: c : d is true if

log(J (a, b)) = log(J (c, d)) ? log(J (a, c)) = log(J (b, d))

In that case, nothing really interesting appears, the norm of the vector (log(J (a, b)) ? log(J (c, d)), log(J (a, c)) ? log(J (b, d))) going from 0.5 to 14 almost randomly on our test set. So we went for the cosine of the two real vectors (log(J (a, b)), log(J (a, c))) and (log(J (c, d)), log(J (b, d))). Below we have the resulting confusion matrix:I3 : To improve these results, we decided to add our initial test eliminating unrelated sets of concepts .

We finally got the table below: I4 :Obviously, in our investigation, Jaccard index in itself does not provide results as accurate as Kolmogorov based computation, at least with this attempt. Of course, it should be possible to combine with other indexes to improve the accuracy but in that case, there would be a mixture of diverse ad-hoc indexes without any clean background behind.

Future works

We have at least 3 obvious ways to enhance our experiment:

- First of all, instead of dealing with the non-structured database Google, we could take advantage of a more sophisticated collection, namely WorldNet. Following the same lines but using WorldNet as a mass generator to estimate Kolmogorov complexity, it would be interesting to compare the output. In that case, we replace the "brute force" of Google with a more clever system. We could implement an automatic test for polysemic words avoiding the pitfall of novel is to artist as poet is to poetry.

- Secondly, we could take advantage of the relationship between the Shannon's entropy and Kolmogorov complexity. This can lead to a more standard distance than the information distance namely the Kullback-Leibler

divergence which is not exactly a distance but measures, in some sense, the amount of information we loose when using a probability distribution instead of another one. It means the same experiments could be undertaken starting from this framework instead of the Kolmogorov framework.

- Finally, to check if a : b :: c : d is an analogy or not is a binary classification problem where the data a, b, c, d are just represented with real-valued vectors. Adopting this viewpoint and starting from a well balanced training set, mixing analogies and non-analogies, we could use an SVM technique in a quite straightforward manner. It should be quite clear that there are a lot of works in diverse fields (linguistics, cognitive sciences, etc...) using word fre-quencies to design diverse similarity/dissimilarity measures: a survey can be found in (Terra & Clarke 2003). Despite their obvious relations, our works are based on a very different approach which takes its roots in the works of (Kolmogorov 1965).

Conclusion

In this paper, we have defined a new way to interpret analogies for concept represented as words. Instead of focusing on structured data or sets and using Kolmogorov complexity as a backbone, we tackle the problem of concepts which is obviously the most common framework for day to day analogical reasoning. Taking our inspiration from previous works (Cilibrasi & Vitanyi 2004), we consider Google search engine as a probability mass generator reflecting linguistic knowledge. Using the log inverse of this mass function, we get for every word an estimation of its Kolmogorov complexity which is used to define agreement and disagreement between concepts: this is our basic brick to define analogy for concepts represented as words. Implementing this definition allows to check its relevance with a sample of well known analogical proportions, mixed with a sample of "non analogies". Our first results show that this approach is accurate but imperfect. It is remarkable to observe that, without any sophisticated knowledge base, simply using as backbone the Kolmogorov complexity, we classify analogies in a relatively proper way. Obviously, the world wide web, unlike a more structured database, provides us with noisy data. If we remember that Google does not distinguish be-tween upper and lower cases, it means that usual common word can be proper nouns for celebrities, giving a lot of distortion: "brown" is the name of a lot of celebrities and provide around 570 000 000 pages but "the brown" provides only 8 300 000. This would not happen with Worldnet for instance: this is the price we have to pay to build up a simple analogy tester without relying on any sophisticated linguistic representation. In term of information, the world wide web mixes opinions with rigorous facts: as a consequence, it is difficult to avoid an important error margin. On top of that, we have the unpredictable behavior of Google, giving incon- sistent results from time to time: this is why to get a better accuracy, we likely need to turn to a structured knowledge base (Worldnet for instance) and using stable mining tools. We can consider our work as a first step toward a constructive analogical learning process for concepts. As we finally understand here, our work is mainly based over an analogy: "Kolmogorov complexity is to Solomonov measure as log inverse is to Google frequency": analogical proportion is a never ending story! Note: all our data and code are freely available on http://www.irit.fr/˜Gilles.Richard/analogy. We are still trying to improve!

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PROVIDING FOR DATA SECURITY IN GIS APPLICATIONS FOR PUBLIC SAFETY

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Abstract

Geographic Information Systems (GIS) are used in a wide range of applications of a sensitive nature, this paper intends to concentrate on emergency/ contingency planning and emergency response management applications of GIS from the point of view of providing the necessary data security in providing public safety and homeland security. These applications necessitate the use of secured communications and networking. Geographic data sets occupy large memory space and most of them are in the public domain, it is considered that only the data representing locational intelligence specific to the application need to be kept as secure data. Multi-user GIS implementations are based on n-tier client-server architecture, the data transmissions in question would be between the server and the clients, some of the clients might be remote and/or mobile clients. In order to provide data secrecy and authenticity the cryptographic technique PKI (Public Key Infrastructure) application is proposed as a solution. The 8-step security protocol explained in this paper can be used to provide a high-level of data security avoiding overloading the network as much as possible. PKI Protocol would secure the communication channels as well as introduce the tools for authentication. The advantages and limitation of the proposed protocol is reported.

1. Introduction

1.1. GIS applications in the field of public safety and homeland security

Geographic Information Systems, which emerged in the early 1990's, nowadays represent a mature technology with a very wide range of application areas. These include asset management systems such as utility networks, telecommunication networks, land and property management, command and control systems for the police and ambulance services and naturally various military applications. In any modern society, the safety of people and the security of the main public infrastructure and assets is of prime importance. The security and efficient functioning of public utility and emergency services need to be protected from any accidents of catastrophic scale or any natural/ environmental disasters or any terrorist attacks which would create similar effects. This paper intends to concentrate on emergency / contingency planning and emergency response management applications of GIS from the point of view of providing the necessary data security. Most of these applications need a reasonable degree of data security in order to maintain necessary public safety and homeland security.

1.2. GIS data retrieval and data transmission

The internet has become, in recent years, an immense resource of geographically referenced locational information. It is still, in most cases, supplied in an unstructured way (Larson, 1999). Of all the web queries, geographically referenced information constitutes an estimated 15% (Egenhofer, 2002). Web "search engine" technology has enabled users to retrieve geo-referenced objects from structured GIS Databases.

The issues in Geographic Information Retrieval (GIR) are identified as detecting geographic references, disambiguating place names, vague geographic terminology, spatial and textual indexing and geographical relevance ranking (Jones, Purves, 2008).

Up until now the researchers in the GIS field concentrated mainly on the semantics and technological aspects of the transmission of geographically reference locational data sets. Whereas probably the most important issue pertaining to the transfer of locational data, in the current socio-political climate, is "data security". The

security ranking of the data belonging to geographical objects and events which take place in the three-dimensional space such as public utility infrastructure, emergency centres, etc. their detailed information need to be treated as confidential and sensitive data from the point of view of public safety. Web access of the geographic information as a web query initiates a data traffic/ data flow over a network or several networks. This is where the geo-data sets need to be kept secure.

2. The importance of access to local intelligence data

2.1. Locational Intelligence and Public Safety

Providing for the safety of people and property, as well as the critical infrastructure which is essential for proper functioning of a community, is the prime responsibility of the State. Public safety, in this context, depends on how efficient are the means provided for tackling:
- crime and public disorder, including terrorist attacks,
- accidents of catastrophic scale
- natural/ environmental disasters

This, obviously necessitates that the relevant government agencies need to have contingency planning and contingency measures in their respective areas.

The data about these events/ occurances should be collected, stored, analyzed, visualized and shared by all the authorized agencies, central and local government departments. On average, 80 percent of these data sets have a "locational reference". This means at least 80 percent of the data in providing for and maintaining public safety is locational data containing "locational intelligence". Locational intelligence is therefore the most important requirement in dealing with public safety and security.

Locational intelligence is location-based total knowledge which consists of the information pertaining to a

particular location in terms of physical geography, demographics, economic activity, and the characteristics of that particular location as travel patterns, traffic flows, housing types, and such population characteristics as occupational classes, income levels, etc.

Logistic matters to a high degree in any kind of business and/or public activity. Emergency planning and preparedness, management of recovery services, management of various operations to maintain public safety and homeland security require location-based decisions. These decisions will have to be based on the available local intelligence information. GIS, in this respect, provides a "technology-enabled" solution to store, to analyze and deploy location-based information in the required format. GIS provides an efficient tool to store and analyze such spatial data and supply the necessary information to form a basis for the decision-making process. The time factor also plays an important role in the dynamic character of the spatial data. There are spatio-temporal population modelling systems that have the capability of taking into account the expected population changes at different times in certain locations (Ahola, et all, 2007)

2.2. Legislative status

From the legislative point of view, the Civil Contingencies Act 2004 prescribes a number of new duties for local authorities which include risk assessment, informing the general public, planning against environmental threats, liaising with new regional emergency coordinators and emergency planning. GIS is an efficient emergency planning and emergency response tool that enables the relevant agencies with the locational intelligence for the area in question.

2.3. Secured GIS applications

GIS-based emergency planning and response systems, within the designed system architecture, need to communicate with the stations located

in geographically dispersed areas. Some of them may be mobile stations/ clients, connected on-line with the main GIS database over broadband links to transfer locational data sets which contains both graphical and textual data (Wang, et all, 2005). Coordination and communications therefore became a very critical issue for the efficient use of such systems. The ability to exchange geographic data sets requires a high level of interoperability which will allow municipal, and regional authorities to share intelligence and information. The centralised database is a platform for centrally managing the GIS data as a secure data repository to be accessed from a number of client stations using a standard browser.

GIS applications are a vital tool for modern society-applications cover wide range of civil, commercial and government activities. The security aspects are vital for almost all these applications. Authentication, secrecy and integrity of the data are significant factors. The security of the data transmitted between the nodes of the GIS application is an important factor for safe and smooth running of these systems. Implementing secured applications necessitates the use of the method known as Public Key Infrastructure (PKI). In the following sections two approaches for the implementation of the PKI are briefly explained. These are the S-HTTP and a suggested alternative approach, in the two approaches both RSA (Rivest, Shamir, Adleman) and DES (Data Encryption Standard) encryption algorithms are used. Integrating PKI with GIS applications will, no doubt, enhance the security of the applications.

3. The GIS data to be kept secure

3.1. GIS data types

GIS databases store 3 types of data:

(i) Background map data: graphical data sets to create a geographic backcloth to provide geographic reference.
(ii) Foreground map data : graphical
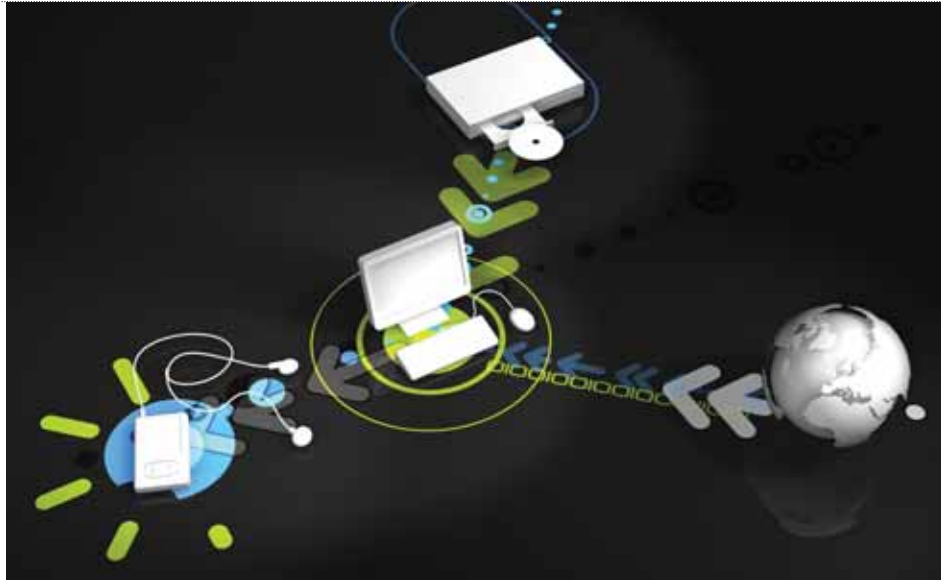
data sets to represent the geographic objects' location and/or actual shape and size, belonging to the objects specific to the application.

(iii) Feature/ Attribute data: textual (alpha-numeric) data sets describing various characteristics of the foreground map objects used in the application.

Foreground data should therefore be kept and communicated as secured data sets, as they relate directly to the exact location and/ or size, geometric shape of assets of the systems in question. The main function of foreground data is to provide "locational intelligence". These data sets are normally stored as separate data layers (in a layered spatial database architecture). Or, in the case of more complex applications, they may be organized as several layers of data.

Usually foreground map data is captured and stored as "vector data" (e.g. utility applications) In some applications it may involve "raster data" such as an aerial photo or satellite image showing an upto date situation (e.g. emergency planning and management in case of natural disasters, flooding, forest fires, etc.). As vector and raster data files are kept as separate data files and their data structures and data storage organization are completely different, the techniques to be used to make

these data sets secure would be different. Therefore providing data security will have to be considered for different data types, vector data, alpha numeric data and probably raster data.

Most of the GIS implementation use "Client-Server" system architecture which allows the main GIS database to reside on the database server to be accessed by any number of client systems. Some clients may be "mobile users". The GIS database can be based on a multi-server architecture creating a Distributed Database Management System. The data communications between clients and server(s) is therefore the main area of data communications.

3.2. Sensitive data both graphical and textual

GIS foreground graphical and textual data which require security need to be considered in:
(i)   Data capture/ data editing by the authorized clients: sending data to be committed into the database.
(ii)   Data search and data retrieval: retrieving/ receiving data from the database as a result of a data analysis or data search activity.

In a GIS application, the data to be kept secure is therefore the application specific data, such as utility assets and their attributes in various public utility systems, location and size of security forces in command and control

systems, sensitive marketing data in commercial systems. This data would be communicated between the clients and servers (client-to/from-server) and between the clients (user-to-user).

Background data sets do not need to be secure data, usually they provide a map backcloth for geographical reference, showing geographical features. Geographic map data is in public domain (for example Google Earth maps and satellite images). There is absolutely no need to make them secure. They should be made available in the easiest and simplest way. In some cases the background map data can be downloaded from a web site, provided that background and foreground map data should be in the same map projection and the same scale.

4. GIS system configuration/ client-server architecture

Networked GIS implementations often use a centralized data repository as a practical solution for a multi-user spatial database for reasons such as data maintenance, data currency, and more important data security. This is, generally, called an n-tier client-server configuration which provides the system architecture that supports distributed computing and data, in which some element of processing is performed by an independent application as service to another system component (Aybet, 1993). Like the GIS technology, client-server system architecture has also evolved to a mature state. Geo-data sets can be dispersed between the servers and clients, allowing the centralized data repository to store only the foreground graphical and attribute data.

The flexibility that client-server architecture provides is that a node in the network can be both a client and a server concurrently. It can provide services to other clients, whilst utilizing the service of a server at the same time. Thus, client-server solutions have been suitable configurations for the implementation of networked GIS applications using distributed database technology.

5. Security protocol for GIS

5.1. Public Key Infrastructure

The Public Key Infrastructure (PKI) is a cryptographic system that provides a solution for communications and network security (www.pki-page.org). It consists of mathematical algorithms and protocols to support secrecy and authenticity requirements. In a PKI, each user is assigned two keys; these keys are called public (E,n) and private key (D,n). The public key is publicly available to any user of PKI, the private key is kept as the digital signature of the user. Both keys are generated by the keys manager. A great advantage of the public key system is that it is computationally not possible to generate the private key from the public key. The most popular public key system is the RSA (Rivest, Shamir, Adleman). Apart from using

the PKI for secrecy and authentication, PKI is also used as key distribution and management; for example it is possible to distribute keys of classical cryptographic system securely over network by using public key protocols. In this paper an RSA public key system is proposed to be used as a tool for secured communications between the network nodes. Each node is assigned a pair of keys, these two keys are the

public key (E,n) and the private key (D,n). Network nodes communicate securely with each other by using these pairs of keys.

5.2. Secured Communications Protocol(S-HTTP)

S-HTTP is an extension of HTTP that provides a variety of security enhancements over the internet. The protocol is designed to introduce a security solution to the internet sensitive applications; security includes signature, authentication, and encryption. Authentication lets clients ensure that they are communicating with the right server and lets the server ensure that it communicates with the right authorized client. Authentication is performed by using digital certificates issued by certification third party. Encryption makes data transferred over the network unintelligible to intruders and eavesdroppers. Digital signatures provide two features: the data integrity and non repudiation, non repudiation is that the receiver of data can prove to a third party that the sender really sent the transaction (Shostak, 1995)

SSL (Secure Socket Layer) protocol, originally developed by Netscape, has been internationally accepted on the

World Wide Web for authenticated and encrypted communication between clients and servers. The Internet Engineering Task Force (IETF) standard, called Transport Layer Security (TLS) is based on SSL. It is published as an IETF Internet-Draft; the TLS Protocol Version 1.0 Netscape product will fully support TLS (Introduction to SSL).

High level protocols like Hyper Text Transport Protocol (HTTP) and Internet Messaging Access Protocol (IMAP) work on the top of Transmission Control Protocol/Internet Protocol (TCP/IP). TCP/IP controls the transport and routing of the data over the global network. The SSL protocol works below the high-level protocol and above the TCP/IP.

Among the features of the SSL is the server authentication. In this protocol Public Key Encryption, specifically RSA is used for clients and servers authentication. SSL also supports the use of encryption algorithm, like Data Encryption Standard (DES) to secure the data communications. Implementing of the SSL/TLS needs the availability of the Trusted Third Party. This is a trusted security organization, established by the government and works under the control of the national central bank. The function of the trusted third party is issuing certificate to server, and control of the authentication of the clients and servers. Using the SSL/TLS will not solve the problems of packet sniffing and IP spoofing, however using encryption with SSL/TLS makes the packet cryptanalysis very hard task, but possible. The SSL/TSL is integrated with the application layer and can be implemented easily with high degree of flexibility compared with SHTTP protocols. Using SSL/TLS will ensure a highly secured communications, alternatively the proposed below protocol will ensure the same level of security for GIS system. Implementation of the proposed protocol is fairly straightforward.

5.3. An Alternative Security Protocol for GIS Applications

In this paper it is assumed that the Geographic Information System (GIS) is a Client/Server N-tier system. The client could be a laptop, PDA or PC; it is also assumed that the client hosts key generation software, namely public key software. One of the servers is the Key Generation and Management server. This Server hosts, among other things, the clients' and servers' public key directory, clients' and servers' NIC numbers, and access control software, and key generation software. In the following protocol the Key Management and Generation Server is called the server and all other servers and clients are called nodes.

A process is granted access to the server if it is using a node with recognized NIC number and has the right user name and password. Inter-node communications are governed by the PKI using the following procedure. Initially, all nodes generate their own public key and private key, register its public key with the key generation server.

The process of transmitting data from node A to node B is the following:

1. Node A requests a DES key from Server to transmit data to node B.

2.The Server generates one time DES key.

3.The server encrypts the generated DES one time key by using the Public key of node A, and transmits the encrypted key to node A.

4. The Server Encrypts the DES one time key by using node B public key and transmitted to node B.

5. Node B decrypts the received block of data by using its private key and extracts the DES key.

6.Node A decrypts the received message by using its private key and extracts the one time DES key.

7. Node A encrypts its message by using the DES one time key and transmits the encrypted message to node B.

8. Node B after receiving the encrypted message from node A, Decrypt the message by using the DES one time key to reveal the transmitted message.

The above 8-steps protocol could be customised on any GIS system, the implementation is fairly simple, and the protocol offers a high level of security. It is important to mention that it is suggested DES to be used as block cipher symmetric algorithm. DES offers a fairly good level of security. DES could be replaced by higher complexity symmetric block cipher algorithm; example is DEA (Stalling, 2002). Another important feature in the above protocol is that it is also possible to be used for message authentication of message and digital signature. For more detail on digital signature the reader is referred to reference (Stalling, 2002). Again it is important to notice that using cryptography to encrypt the data transmitted over between the nodes of the GIS network will degrade the performance of the network. More than one solutions are available to overcome this problem, first solution is to limited the use of the encryption to sensitive data, the second is to use a commercially available hardware encryption devices to encrypt the data and the third is to use compression techniques to reduce the size of the transmitted data (Zhu, et all, 2007).

6. Conclusions

It has become apparent that the GIS applications in the areas related to public safety and homeland security deal with the data which is considered should be kept secure data that should not end up in the wrong hands-especially the data belonging to emergency/ contingency planning and emergency response management of the central and local government agencies. As these data sets have to be transmitted over a network, usually a wireless network, data security becomes a major issue in the current socio-political climate. Therefore the foreground data belonging to the geographic objects of a particular GIS application, both graphical and attribute data need to be treated as secure data.

Interception of the data stream by unauthorised parties will make the GIS system in question prone to security threat. The required data security can be provided by using a hardware encryption device and using data compression techniques. These would be the security measures with the sensitive data. The 8-steps security protocol explained in this paper can be used to provide a high-level of data security avoiding overloading the network as much as possible.

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THE CO-CREATING OF EXPERIENCES IN THE EVOLVING INTERACTIVE MARKETSPACE

Dr Wilson Ozuem

Abstract
Marketing communications literature has departed from unidirectional models of communication towards increasingly emphasising the omni-directional interactivity in which companies and customers are co-creating the communication process. The proliferation of the Internet and World Wide Web (WWW) in recent years has resulted in the creation of new social and marketing spaces, and a new form of interaction and identity formation. Whilst cost benefits and profit derivation of the Internet and other hypermedia mediated communication environments have been the focus of much research, the majority of these assessments have left many assumptions unarticulated. Questions of how the present communication content and interactivity is different from the evanescent monolithic one-to-many communication models have been avoided. This paper investigates these deficiencies.

INTRODUCTION
The pace of change brought about by new technologies has had a significant effect on the way companies and consumers relate to one another. New and emerging technologies challenge the traditional process of transactions and the way communications between consumers and companies are managed. The advent of the Internet along with its prototypical subset (Web) is having a major impact in the way in which communications between companies and consumers are conducted and maintained in the evolving marketing landscape (Ozuem, Howell, Lancaster, 2008). Much of these changes have been characterised and explicated in complex unconnected links with marketing communication processes that enshrined consumers' moulding behaviour in the evolving interactive marketplace. Current understandings tend to question whether the recent and most remarkable changes as a result of Internet ubiquity warrant a paradigm shift from the praxis of marketing, especially in marketing communications and competitive advantage (Tapscott, et al 2000; Castells 2001; Molenaar 2002; Slevin 2002).

In this context, it is interesting to recognise the profound influence of consumers changing behaviour in the nascent marketing communications landscape. Ordinarily, Internet technologies breed higher order communication between organisations and consumers and consumers to consumers. The essence of the communicative continuum within the medium breeds interactivity. And likewise, interactivity breeds vibrant and active communicative environments where users could probably act and conduct their activities akin to connative experience. Considering the dynamics of the Internet as cohesive information repositories as well as a marketing medium, the once asymmetrical leaning upon which companies have inexorably goaded consumers in the past decades are now metamorphosing into a collaborative terrain where consumers are no longer in the dictates of the orthodox-based communication media.

Whilst there is numerous literature that explicitly foregrounds the interactive marketplace, Hoffman and Novak's (1996) new marketing paradigm for electronic commerce has become the aspic lodestar of this exploration. On the basis of the seismic changes in the interactive marketplace, the authors identified two broad categories of consumption processes (Presence and Telepresence) and treatised consumers in hypermedia computer-mediated environments to experience

telepresence (Steuer, 1992), the perception of being present in the mediated, rather than real-world environments. Following this line of thought, in my opinion, points to an expansion of perception and the experience of presence beyond the presence. Hoffman and Novak urged the decoupling of hypermedia mediated environments from the transcendent and yet, surprisingly, offer few suggestions for accomplishing these dichotomous environments in the consumption processes. When one talks about computer-mediated environments, much that drives interaction does not exist in users' exteroceptive experience. Rather consumers experience seemingly introspective and unipolar environments. Hoffman and Novak, in particular, influenced practitioners and researchers to start grappling with the consumers interactive trajectories in the evolving marketspace environment. Increased understanding of computer-mediated marketing environments championed by Internet technologies should, in turn, enhance the design of reflective and effective marketing communication programmes between marketers and consumers, which would lead to effective relationships within the consumption process. The study assumes that computer-mediated marketing environments, a commercial and pedestal facet of Internet technologies provides, marketers with a malleable context that can be used to deliver content in a variety of ways to consumers. This capability highlights the distinction between the information in marketing communication and the vehicle used to deliver the information: that is, content differs from communication. Also, the versatility of the Internet as a context for mediated communication means that marketers can integrate different modalities of marketing communications into a strategy that combines online and offline tactics to meet strategic objectives (Coupey, 2001; Varey 2002 p.346).

FROM MONOLITHIC MEDIUM TO HYPER MARKETPLACE INTEGRATION

The integration of various conventional and hegemonic media into a hyper electronic marketplace heralds a new vista within the consumption process: providing a flexible and dialogical access between marketers and consumers in a way that undermines the instrumental and functionalist view of communication. Providing fundamental opportunities where consumers are no longer passive recipients of communication but active participants in shaping their communication reality. Despite the alienation of asymmetrical marketing communication models as perpetuated in the technical-rational view of the nature and purpose of knowledge premised in the pedagogical scientific approach, marketing practitioners are prevalently and universally incorporating the emerging marketing medium as nothing more than informing technology. As a result, practitioners seek assumed cause-effect type action -outcome situations in which marketing communications are wielded toward the achievement of rational objectives in aberration of the sediments of social exchange reality of the communication medium (Varey 2002, 2005; Hackley 2004).

Driven by the perpetuation of the mainstream quantification models, practitioners are obtusely ambivalent toward the voidance and inapplicability of the conventional monologic models. The absence of understanding resulting in the continual deployment of a m e c h a n i s t i c communication model may impede practice, which undermines the trajectories of development in marketing theory and practice concomitant to a dominance and exclusivity of economic thinking and values and a limitation of marketing to transactions involving exchanges (Buttle, 1990; 1995; Varey,

2000). There is a power effect of this ideological mainstream marketing, which tends to diffuse within the professional practice with less cognisance of the interactive apocryphal epoch of mediated marketing environment (Hackley, 2001: 106-107). In a recent study, Varey (2005) cautions that the nature and role of 'communication' has been 'taken-for-granted' and likewise marketing communications is far more than consolidated and associated to product promotion activities. Therefore, there is a need for conceptualising marketing communication in the evolving interactive marketplace with the primal task to facilitate understanding in culturally and socially-constructed environments.

In the past years, much has been reported on the cost effectiveness of a Web presence in the Business to Consumer (B2C) area and the predominant aspect of the Internet marketing in Business to Business (B2B) Carl and Shapiro (2000); Hagel (2000); Hoffman and Novak (1996). However, research in Web marketing theory and practice is not well developed. What does exist indicates that the written text, a predominant trait of World Wide Web, (WWW) and the creation of virtual communities are important aspects of the Web marketing process. Whilst the literature pertaining to a Web presence is not exhaustive, it does provide some

possible clues for conceptualising the nature and segments that have evolved from this paradigm. Prior to this study, there was not a great deal of information available about marketing communication trajectories in cyberspace as virtually all extant models espouse the passive one-to-many communications. Web presence research took place in managerial, organisational, health therapy and educational settings and focused on cost effectiveness and social support derivations (e.g., Epston and White, 1994; Berthon et al., 1996; Wellman, 2000; Burrows and Nettleton, 2000).

CO-CREATING UNIQUE EXPERIENCE IN THE MARKETPLACE

The Internet is a model of distributed computing that facilitates interactive, multi-dimensional, many-to-many communication. As such, the Internet supports discussion groups (Usenet news and moderated and unmoderated mailing lists), global information access and retrieval systems such as the near ubiquity of the World Wide Web. The WWW, the first and current networked global implementation of a hypermedia computer-mediated environment (CME), is increasingly being recognised as an important emerging commercial medium and marketing environment (Hoffman and Novak, 1996). The proliferation of the Internet and World Wide Web (WWW) in recent years has resulted in the creation of new social and marketing spaces, and a new form of interaction and identity formation. Whilst cost benefits and profit derivation of the Internet and other hypermedia environments have been the focus of much research, the majority of these assessments have left many assumptions unarticulated and avoided the questions of how the present communication content and interactivity is different from the monolithic one-to-many commu-nication model. Consumers, hitherto receivers of the unidirectional mode of communication, have been transf-ormed in to potent participants in the emerging networked economy.

The potentials of the networked economy, especially its prominent prototype the internet, has not only created a global economy but has created a means of communication through the popularity of the WWW. The inherent potential of the World Wide Web on the Internet as a commercial medium and market has been widely documented in the relevant literature (Evans and Wurster, 1999; Hoffman and Novak, 1996; Armstrong and Hagel III, 1996; Deighton and Barwise, 2001; Blattberg, 1996; McKenna, 1995). For example, Kiani (1997) contended that the increasing popularity of the Web has given many consumers, marketers and users a new experience. Despite the fact, however, that this is recognised as a central issue in the marketing and marketing communications literature, there is still a lack of rigorous cross-industry empirical research on interactivity and benefits of accessing the evolving marketspace.

Hoffman and Novak (1996) pointed out that the Internet and World Wide Web, in particular, have some unique characteristics that make them central to the perceived paradigm in the way in which goods and services are likely to be marketed in the future. Hoffman and Novak proposed that the World Wide Web is a virtual, many-to-many hypermedia environment incorporating interactivity with both people and consumers. Thus the Web is not a simulation of a real world environment, but is an alternative to the real-world, where consumers may experience telepresence (Steuer, 1992), the perception of being present in the mediated world, rather than a real environment. Hoffman and Novak maintain that users of the medium can provide and interactively access hypermedia content and communicate with each other. The authors assert that two unique properties, machine-interaction and person interaction, have contributed to the rapid diffusion of the Web as a commercial medium in the last several years. Corresponding to Hoffman and Novak's ontological perspectives of the uniqueness of the Internet, and inter alia its archetypical

facet, the World Wide Web, Blattberg et al (1994) counter that marketing is shifting into a new phase which they called the fifth phase. The authors, by tracing the historical development of the market and identifying five different stages of market development, explained the ways in which the information revolution would probably transform the firm and marketing function. The internet is a new form of mass communication. Mass communication, while itself a relatively new phenomenon, has always involved controlled broadcasts to passive audiences. As in most marketing communications, the mass audience has never had any significant input, or control, over the content of mass communication. With the nascent Internet, these characteristics of mass communication have forever changed. On the Internet we find massive numbers of organisations and individuals broadcasting information to a massive number of audiences.

FINAL REFLECTIONS

In summary, it is imperative to understand that the marketing activity of some digital products could be conducted entirely without contact with the physical domain. As indicated by the respondents, information accessibility is completely porous as users can remotely access information relative to their areas of interests at anytime and anywhere. Instead of waiting for such information to be delivered at their place of abode, it can be delivered in real-time and be obtained within seconds. Whilst individual perceptions of the evolving medium have been foregrounded, the impact of the medium on the transaction stage is driven by various product and consumer-related factors.

One obvious determinant of the accessibility of online transactions is the ratio of information content versus physical content for a certain product. When a product can easily be digitised, then delivery will be easy, as is the case with video-on-demand and music. A major bottleneck for the development of Web-enabled business in the consumer environment

is the difficulty involved when evaluating products through the Internet. This also accounts for the huge gap between the online search and transaction completion. Successful choice amongst multifaceted product alternatives often requires certain levels of consumer expertise: e.g. understanding the attributes of products and knowledge about how to various alternatives are moulded on these attributes. As a tool for transaction, the medium is more suited for information gathering than expertise. Marketers may need to conceive of new approaches if they are going to succeed in the interactive marketplace. Indeed, an overreliance on traditional marketing communication models, such of the one proposed by Shannon and Weaver (1949) on their 'The mathematical theory of communication', might fail to capture the new dynamics entirely.

The Author

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SOLUTIONS

SUDOKU

5	7	9	1	3	6	8	2	4
2	8	3	7	9	4	5	1	6
6	1	4	2	5	8	9	3	7
9	2	5	8	6	7	1	4	3
3	6	8	4	1	5	2	7	9
1	4	7	9	2	3	6	5	8
4	9	6	5	7	1	3	9	2
8	3	1	6	4	2	7	9	5
7	5	2	3	8	9	4	6	1

CHINESE CROSSWORD

¹T	R	²A	N	³C	E	■	⁴C	L	O	⁵T	H
A	■	I	■	H	■	⁶T	■	■	■	O	■
⁷C	A	L	L	I	G	R	A	P	H	Y	■
I	■	■	■	N	■	O	■	■	■	S	■
⁸T	E	A	■	O	■	O	■	⁹P	■	■	¹⁰B
U	■	■	■	I	■	¹¹P	L	A	¹²G	U	E
¹³R	¹⁴A	V	I	S	H	■	■	¹⁵G	I	■	I
N	■	E	■	E	■	¹⁶Y	¹⁷O	■	N	■	J
■	¹⁸A	G	A	R	■	U	■	D	■	■	I
■	■	A	■	I	■	¹⁹A	M	²⁰A	Z	O	N
²¹L	A	N	T	E	R	N	■	■	N	■	G

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Today's world offers many opportunities for new businesses based on emerging technologies. However, the pace of development, together with the ever-accelerating speed of communication of ideas and transport of goods and people bring new challenges to the leaders of organisations.

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