



GRESHAM COLLEGE
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Armageddon in Cyberspace: An introduction Transcript

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Armageddon in Cyber Space: An Introduction

Professor Tim Connell

Welcome to Stationers' Hall for a joint event with Gresham College. For the Stationers, Gresham College is an Elizabethan foundation, only slightly younger than yourselves, which opened in 1597 thanks to the munificence of Sir Thomas Gresham, financial adviser to four monarchs, international businessman, diplomat, spy, gun runner and money launderer. He established seven chairs in order to provide access to the New Learning, and educate the good citizens of London. An eighth chair, in Commerce, was established more recently. Today the College is in good heart with over 20,000 people attending some XX lectures per year, and over a million people follow the lectures via the Internet and social media.

For the members of the College, the Worshipful Company of Stationers and Newspaper Makers originated as a guild in 1403 and became a livery company in 1557 at the behest of Queen Mary and King Philip of Spain. It is flourishing today with around 800 members, representing both the traditional and modern arms of our trades, which range from paper making and book binding to digital media and three-dimensional printing. The Company is also heavily involved in charitable works, including support for the Royal Marines and plans to establish a new Stationers' Academy.

We join forces tonight to consider the question of Armageddon in Cyberspace: the world is so heavily dependent on the internet and electronic means of communication that thought must be given to the unthinkable. Not just how on earth did we ever get by without the internet, but what would (or even will) happen if cyberspace goes wrong, whether on a temporary or permanent basis. And in these difficult times, what threats face our use of cyberspace and how can we protect ourselves from dangers both known and unknown.

Things of course always have gone wrong with record keeping, whether through clerical error, mis-filing or the odd coincidence. Over the years, for example, I have had trouble with both the bank and the local surgery over the fact that there were two T.J. Connells in their records. But almost every area of both public and private life is now computerised, and we have come to be totally dependent on automated systems of one sort or another. We also assume that they are highly reliable, though not infallible. We have harsh experience already of what happens when money stops coming out of the wall, and viruses, Trojans and worms have become part of the everyday language. What we also might have to consider is what would happen if systems went only slightly wrong, for example, if SatNav was out by even a few hundred yards. Think of a jumbo jet coming in from Australia, a distance of about 10,500 miles (or 18,480,000 yards approximately) which misses the runway at Heathrow by a mere 400 yards, which is actually an error of 0.00216%. Statistically negligible, you might think, though in reality that would put the aircraft down onto the M4...

More sinister questions arise with regard to deliberate sabotage, cyber attack by subversive groups or hostile governments, not to mention espionage, industrial or otherwise, let alone Wikileaks which claims some sort of higher moral purpose. And if Gary McKinnon, with his learning difficulties, could hack into the Pentagon, then nothing can be absolutely safe.

The underlying question, however, that we need to address, is whether cyberspace is infinite. Did humankind discover it or invent it? If we discovered it, then does it have borders or boundaries? If we invented it, then are there any flaws in its design that cannot be resolved? Either way, we have become totally dependent on it for almost every aspect of human life from personal banking to navigation to everyday shopping. The supermarket supply chain is now heavily automated (think ocado.com) and operates on a just-in-time basis. But if something goes wrong, how soon will supermarket shelves start to empty if something goes wrong, and how long then before panic buying sets in? And are there contingency plans for such an eventuality?

Could such things happen because of natural phenomena such as electrical storms, solar flares or sunspots? The recent tornado in Oklahoma shows how vulnerable we are to the vagaries of the weather. I'm not sure whether we can talk about mechanical failure with electronic systems, but could there be a catastrophic failure at system level? RBS, NatWest and Ulster Bank customers have found out to their cost that an app going wrong, or failure to upload new software can cause enormous inconvenience, even if the problem is solved in a matter of days - and it cost the bank 175 million pounds to put things right. Ominously, and perhaps more plausibly, could the system fail because of cyber attack for industrial, political or military reasons?

Equally, could there be a more innocent scenario, whereby everything from the retirement of Sir Alex Ferguson (which prompted six million tweets in 24 hours) through to the latest Lady Gaga video simply clogs up the system? Might we even reach a point where we have a two- or three-tier system, with a version of Citizens' Band for casual or social users, a wider band for commercial use, and a third secure layer for the emergency services, hospitals and other essential users? There would of course (and there probably already is) a shadowy fourth layer for offence and defence - don't let's forget that the War Ministry became the Ministry of Defence back in 1964. Might we even be in a situation reminiscent of MAD (Mutually Assured Destruction) in the Cold War

whereby the infrastructure of daily life, professional and commercial activities are so intertwined in cyberspace that every country in the world will sign a new Geneva Convention, guaranteeing the integrity and security of e-systems that will be as essential to human survival as air and water? In the meantime, armed forces will need to be configured to meet the new threat. We might even find that the traditional boots and bayonets will be supplied by the new Army Reserve while the full-time military have Ph.Ds in electronics and engage in the biggest and ultimate computer game of them all. A future war, whether regional or global, might be fought exclusively in cyberspace without a shot being fired – one enormous 3-D game of noughts and crosses.

Twenty-five years ago, when the fax machine came out, it was a godsend for those of us working in countries whose postal systems left something to be desired. (Every main post office in Mexico soon installed one.) City University in 1990 actually had its own fax machine - just the one, located in a room next to the Vice-Chancellor's office, and jealously guarded. Within two years, every department had one, though I can lay claim to being the first person to put my e-mail address on my headed notepaper. We even had a special address book (blue for phones, yellow for e-mail) for those enterprising staff who had set up on PINE and later PEGASUS. Then President Clinton began to talk about the Super Highway, courses opened in Computing for the Frankly Terrified, and the internet, mobile phones, apps and who knows what next have become part of everyday life. Yet the first patent for a recognisable fax machine was taken out in 1846, and there were many variants after that, including the teleautograph of 1888, which allowed signatures to be sent and verified over long distances. Xerox introduced Long Distance Xerography in 1964, so the development of what we now regard as intermediate technology has been remarkably slow in comparison with the technological explosion of the last twenty years – and that was a time when I was renting mobile phones by the day for use in off-site PR activities.

Tonight we have an expert panel, and no doubt the combined intellectual firepower of a Gresham College audience blended with the Stationers' Company will provide a whole pool of new ideas and we may well be able to speculate on developments in the next twenty years. Whether we will come up with any concrete solutions before the drinks are served, remains to be seen. But the Stationers' legendary hospitality may well engender some lively debate and conversation.

CONCLUDING POINTS

Perhaps we should focus more on the benefits of the new technology to humankind in fields such as surgery, and look at the ways in which mobile phones in particular are changing the developing world with phenomena such as the Arab Spring on the one hand and micropayment systems on the other. My fear though is that the security and military appliances of cyberspace will move fastest. Whether or not China has the satellite technology to target American aircraft carriers from space (the Star Wars Initiative of the 1980s seemed to run out of steam), it is to be expected that the cyber attacks and challenges that we have seen in recent years will continue. This could even lead to a democratisation of defence matters with the formation of an on-line electronic Home Guard capable of imposing blockades or counter-measures by linking everyone's computer in the country, rather like the housecarls locking their shields at Hastings, or the trained bands turning out to block King Charles at the Battle of Turnham Green. Will the Royal Observer Corps of 1940 be replaced by home-based hackers (or quite possibly anti-hackers) linking arms electronically via community computer grids to repel cyber invaders? Stranger things have happened: the so-called Y Stations in World War Two used teenaged radio hams to listen in to enemy radio traffic.

Not to end on a pessimistic note, but what happens if the Armageddon is not in Cyberspace, but down here on the ground? Wi-Fi has been invading public space in recent years, and most people have a computer switched on at home? Is there any possibility that signals or sound waves from such devices could be harmful to humans? The Council of Europe has already recommended that children be protected from electromagnetic radiation emitted by radio equipment. What if holding mobile phones to our ears for several hours a day is actually damaging in the long-term? There is increasing concern about protecting children from cyber-bullying and unsuitable websites, but former Gresham professor Susan Greenfield has also expressed concern that our brains could be altered by regular, or not excessive use, of computer devices. The amount of time spent on a computer at work (and, even worse, working on a computer at home out of office hours or on holiday), the extent to which information is delivered on-screen and the way in which Apps have become an indivisible part of everyday life, makes Cyberspace an intrinsic part of everyday life. We have to learn to live with it, so we all need to make sure that we control it – and not the other way round.