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TEACHERS AND MANAGERS

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The Internet of Things: ethics of our connectivity

John Mikton

'Most human beings have an almost infinite capacity for taking things for granted.'

Aldous Huxley, *Brave New World*.

What does it mean to live in a world where our dependence on digital devices and hardware ecosystems is non-negotiable? As our lives get tied up in a world of machines, how do we balance, control, monitor and engage with the 'Internet of Things' (the different devices, hardware and appliances connected to the internet) in a manner that allows us to still feel in control?

The digital devices we use, connect and interact with have become seamless parts of our day. Many of the processes and tasks they complete are invisible to us. Rarely do we need to take our digital devices and tools apart, or sit down and understand how they work or why they are working, and this growing disconnect between our own understanding and participation with the Internet of Things. There is a gap where we are becoming more and more sidelined; where we are no longer active but passive consumers.

The Internet of Things is predictive and intelligent. An example would be the navigation system in your car, or when you type into Google search and it already assumes certain understandings. This dynamic will impact our world significantly, redefining organizations, work forces, how we function as economies and societies. In tandem, it will challenge our ethics, relationship and interactions with machines.

The Internet of Things is a concrete outside force, which comes into play challenging our learning communities. One of the biggest shifts which has evolved from it is how the workplace is radically changing due to the adoption of new technologies and, more importantly, a break from traditional business models. Some examples are Air B and B and Uber, two popular companies with widely-used services/apps. There is now a surge of start-ups fuelled by the e-economy which are re-framing employment rules in the work place. A generation of students in schools today is entering a new work place being choreographed by these changes. The social contract of employment we have lived with is being turned upside down.

Tools can now be emailed at a click of a button (Nasa emails spanner to space station @BBC) and constructed in the confines of our homes with a 3D printer. So how does that shift the dynamic of manufacturing and in tandem the role of design, location, innovation and production? As this develops we are seeing a re-framing of manufacturing, and it will not be about location but innovation, creativity, flexibility and adaptability.

The growing field of machine intelligence and the complex dynamics of the ethical implications are starting to challenge our own moral construct and the relationship between machines and humans. Shivon Ziliss shares an interesting graphic on her blog (The Current State of Machine Intelligence) that delineates the companies and organizations involved in machine intelligence and the accelerated growth of areas unheard of a few years back. The growing investment tied to the development of machine intelligence, coupled with the field of 'learning machines' as described by Jeremy Howard's Tedtalk are ushering a science-fiction-like future that is actually being constructed today.

These are just a few of the many new shifts changing our world and being unpacked before our eyes. A term that encapsulates these forces well is VUCA, an acronym for 'volatility, uncertainty, complexity and ambiguity' initially coined as a military term in the 1990s and now often used by companies and organizations engaging with various leadership frameworks.

For many of us the convenience of a frictionless experience with our digital devices, tools, and environments is a huge plus. For this frictionless experience, many of us are willing to give up a level of our privacy to third parties. After all, a convenient and seamless experience is the key for users. Nowadays many of the actions, processes and uses we engage in on digital devices, tools, and environments are almost subconscious. Our usage is so embedded in our daily routine, both social and professional; it becomes a non-negotiable part of our life.

With this precedent, we have entered a world where personal information aggregated over time is combined, analyzed and then generated into a longitudinal profile of us. This rich set of information is then sold, traded, and curated by organizations, governments and companies. It is from these information landscapes that services and products we might need can be accommodated or altered based on our profile.

The question of course is what our world will look like as every single digital device, tool and environment is consolidated, monitored, aggregated, and analyzed over time. Yes, maybe you could try to opt out, but it is unfortunately becoming harder and harder to do so as the internet becomes more integrated with our culture. Commerce, social

media, communication, socialization and work have all moved to an online environment 24/7 in most parts of the world.

Does it matter? Are our online profiles and habits a true reflection of who we are? Does this aggregated information provide us with services and experiences that supersede the erosion of privacy? Either way, the discourse is clearly an integral component of our connected data experience.

With this new narrative being constructed with the growth and influence of the Internet of Things and the erosion of our privacy there is now an opportunity to revisit the words and/or vocabulary we engage with to describe and frame our conversations with the digital world. Exploring the words/vocabulary is important.

Words are a powerful vehicle for meaning and understanding, connected to individual or group perspectives, interpretations, and connections. The word 'digital', first used in Nicholas Negroponte's book *Being Digital* in 1995, has been part of our vocabulary for a long time. In 2014, 'digital' has now blended itself into the daily fabric of our lives. When we think of 'digital', it creates a sense of disconnect from our world and implies that the digital world is a separate part of our reality. However this is no longer true. Our lives are so embedded within this digital realm that the two have become inseparable. So, I invite you to use a new set of vocabularies to frame this paradigm: appliances, utilities, information flows, ethics and algorithms.

Appliances are the consumables that we connect and interact with (laptops, phones, tablets, GPS, and other hardware). These tools have become the default to our connectedness, disposable and with each new version more seamless, simple and integrated.

Utilities frame our day-to-day interactions. These social media, networks, email, RSS, professional learning networks and Web 2.0/ 3.0 tools have become the architectural framework of communication and information for our connected world.

Information flows are the 150 million Blogs posted a year, 5 million tweets per day, 200,000 videos uploaded on YouTube daily, and the information created, aggregated, shared, and circulated daily around the earth-petabytes.

Ethics is the why, how, when, where and who of our digital footprint. It is the wide-ranging issues from KillerRobots to the impact of a Filter Bubble (where search, news, and information

algorithms choreograph what information types we get based on our personal browsing habits). The curation of our online and offline privacy as governments, corporations, and organizations juggle a treasure trove of information created by our respective digital footprints is the new ethical dilemma we all deal with, as individuals, groups and as societies at large.

Algorithms are the backbone to the intelligent softwares that inhabit the internet engine. These are predictive, anticipatory, intelligent and analytical, the lifeblood of the internet ecosystems for individuals, governments, corporations, and organizations which then create, develop, build, facilitate, monitor, analyze, synthesize and evaluate our day-to-day interactions. The algorithms have become the lifeline to the information flows, ethics, utilities and appliances.

These words are not the definitive list, but reflect a vocabulary we use both from our past and present. They highlight how the 'digital' world is ingrained in our daily lives to the point that we are often not even conscious of its presence. This connectedness, fuelled by our devices and ecosystems, are now part of the fabric of our lives, often out of our control, and a non-negotiable aspect of our own participation with the day.

A critical understanding of these words and their respective dynamics should be an essential ingredient in school and organizational curricula. We can no longer think of them as separate entities. We have inherited this reality which now has us connected in ways where opting out becomes abnormal. These appliances, utilities, information flows, ethics and algorithms are part of the fabric of our world and impact us as humans both consciously and unconsciously.

As the accelerated changes of the Internet of Things, words, vocabulary and privacy connect, collaborate and weave an ecosystem in a rich variety of contexts, we as educators have an ethical responsibility to be engaged with the creative tensions that these different components create and help choreograph and curate the narrative our students are engaged with.

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