

Think Before You Tweet: Improving Awareness of ICTs and Emissions

Why should we think critically about information and communications technologies?

The overwhelming majority of greenhouse gas emissions generated by an electronic device – between 70% and 80% – are generated by consumer use. Though we need to address a range of issues around ICT infrastructure sustainability, we must begin with small steps, by talking about our technological practices.



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We live in a material world that is increasingly filled with virtual goods and services, from the pixellated simplicity of Facebook gifts and the plain text of Twitter, to sophisticated virtual worlds of massively multiplayer online games. Yet these apparently virtual domains of online services and commodities are inextricably linked to urgent and troubling material realities at each stage of their life cycle that are often invisible to consumers and end users. Digital consumption has quantifiable effects on the environment – from green house gas emissions from energy-hungry high-density computer facilities to heavy metal concentrations in water and soil in regions where discarded electronics are illegally dumped – as well as more complex impacts on human beings and communities. Previous work on ICT externalities has focused on unsafe working conditions in electronics factories and mines, pollution generated in production and refining, and unsafe disposal practices which link our digital pleasures in the global north to social injustice and environmental degradation in the global south. Yet the overwhelming majority of greenhouse gas (GHG) equivalent emissions generated by an electronic device during its life cycle are created through consumer use, which relies upon energy intensive infrastructures that support online services and digital consumption.

These enormous infrastructures are invisible to most users and are unproblematised by users, ICT professionals and even environmental activism groups. In public and professional discourse, there is very little critical reflection on ICTs and energy use. In

fact, further expansion of the IT sector is often portrayed as “excuseable” or justified because of purported green house gas emissions “savings” created by ICTs. This Panglossian approach from the professional sector does not lend itself to critical reflection on the role of ICTs in contemporary Western consumer societies. The very notion of ecological materialities associated with virtual activities is also alien to how ordinary users think about ICTs. Before we can have meaningful public debate about sustainable ICTs, we need a better public understanding of how our current infrastructures are unsustainable, because change will not arise within these industries of its own accord.

Invisible Infrastructures and Emissions

Communicating the scale of ICT infrastructures to everyday users is complicated by widespread lack of knowledge about how these technologies work. To ask where a Facebook status update or Tweet goes after we click “Send”, seems a nonsensical question. It must go somewhere before it appears on our screens and the news feeds of all our friends, we did press a button marked “Send” after all. But where exactly does the message go? Where is that update three weeks later? Is it still sitting somewhere in the ether? The answer is not “It goes to a server” or “It goes to the Internet” – those are too simple and easy, they absolve us from critical engagement. Like the illusion of garbage, which many Western consumers believe simply “goes away” when we put it into a trash bin, Facebook status updates, Tweets or emails are subject to a magical thinking. We use ICTs without thinking, or wishing to think, about how or why they work.

The biography of a Facebook status update is not a frivolous question, because it brings us – as regular users of information and communication technologies – face-to-face with the material realities of what seem to be immaterial, virtual services and goods. In the moments between being visible only to me and being broadcast to the people who are bored enough to look at my Facebook

profile, a status update may take a very complicated route through multiple digital “gate keeping” devices – a router, my university’s local network servers, the university’s Internet Service Provider’s servers – before reaching an Internet backbone, and from there striking out for the nearest Facebook data centre. This digital voyage – even more complicated for messages from mobile devices – requires more than some plastic boxes filled with silicon, it also needs a telephone system and fibre optic cables, some of which are on the ocean floor. However, all this equipment just keeps the Internet running; it doesn’t give us Facebook or 4chan. Online service providers such as Google, Facebook, Flickr and Twitter require hundreds of thousands more servers running continuously that also require energy-intensive cooling and dehumidifying systems. Green Grid (2007: 3), an IT industry corporate social responsibility think tank, estimated that most data centres have a Power Usage Effectiveness ratio of 3.0 or higher, meaning data centres are highly energy inefficient, using only 25% of their energy for running servers, with the rest devoted to cooling and non-server power consumption. The Global eSustainability Initiative’s (2008: 17) report, “Smart 2020”, estimates ICT emissions in 2007 at approximately 2% of total green house gas emissions, or 830 Mt CO₂e. However, simply saying that these machines exist and that they consume energy, which then produces emissions, does little to stimulate a critical conversation on ICTs. GHG emissions or energy consumed is not enough to start a critical debate about ICTs, because this information does not make energy consumption relevant to the ordinary activities of users. The next, more difficult, step is to problematise these issues and encourage critical debate.

Problematizing ICT Infrastructures and Emissions

In the mass media, and even by industry professionals, ICTs are widely portrayed as environmentally friendly or capable of creating or popularising new practices – such as telework, video conferencing, virtual meetings, smart motors and devices used in industry – that will reduce transportation and production emissions. Absent from this techno-utopian view is the reality that ICT infrastructures are expanding rapidly. Growth in ICT energy use from 2007 to 2020 is an estimated 6% per annum (GeSI 2008: 17-18), under a “Business as Usual” scenario. This expansion, and its correspon-

ding emissions increase, is justified by pointing to the emissions savings in other sectors facilitated by ICTs (GeSI 2008: 3, 7, 16). Of the report’s four chapters, the shortest substantive one is on energy use in the IT sector, and the longest is devoted to how ICTs can “save” energy and emissions in other sectors. The GeSI “Smart 2020” report is a metonymy for problems in the IT sector as a whole. There is a tremendous amount of back-patting and an unrealistic perception that ICTs can be permitted to grow while every other economic sector needs to reduce emissions. Industry experts and professionals are deeply invested in this image of ICTs as “environmentally enabling” and “energy efficient”. The strength of these messages, put forth in corporate social responsibility reports and by sustainable computing groups like the GeSI, Green Grid and

Uptime Institute, reinforces a view in which industry is managing environmental impacts and consumers need not worry, which obstructs critical, ecologically-minded engagement with these issues.

Despite Greenpeace’s campaign “Get Facebook to Unfriend Coal”, there has been a decided lack of discussion about ICT emissions and what the expansion of this sector means for our planet. In 2002, ICTs and the aviation industry both contributed 2% of global GHG emissions. By 2008, ICTs generated more emissions than airlines (GeSI 2008: 18). Curiously, air travel has been the focus of intense scrutiny and protest, while ICTs remain unproblematised. In Britain, thousands of environmental activists built a “Climate Change Camp” and protested a proposed third runway at Heathrow Airport, on the grounds that a bigger airport



would mean more flights and more carbon emissions. Yet no environmental groups have protested over the opening of new data centres; there is no "Climate Change Camp" at Pineville, the site of Facebook's controversial coal-powered data centre; and there is certainly no ICT equivalent for bourgeois anxieties about air travel. Pressure is needed from activists and ordinary users, but such a movement requires informed, critically engaged actors. These actors, and the critical ecological discourses on ICTs that would support and inform their activism, are as yet barely formed.

How do we produce an ICT-related climate change debate? Problematising ICTs and energy use requires informed actors with a critical attitude toward these technologies, which may be the most difficult part. Information and communications technologies present themselves as friendly and even sensual – the iPad and iPhone are tactile, pleasurable devices as much as they are computing and communications devices. Being critical of pleasure in consumer society is anathema, as it contradicts the very engine of consumer society: desire (Bauman 2001: 12). A simple entry point for stimulating the development of a critically engaged

ecological approach to ICTs in consumer societies is a discussion of user practices, one that acknowledges an old truism of computer support technicians: a Problem Exists Between Keyboard and Chair (PEBKAC). Only when users have knowledge about their own practices can they be empowered to take action over unsustainable ICT infrastructures. To expect otherwise is to put the horse before the cart.

A Polemical Conclusion

The fatal illusion of our times is not climate scepticism; apocalyptic religious fanaticism; or neo-liberal market rhetoric. The psychological disease of the Information Age is a belief in purely virtual things and services, a kind of magical thinking supported by ICT industries that obscures the very real costs and impacts of these technologies. Our virtual pleasures in the global north are inextricably linked with climate change through increasing energy demands and expansion of extensive infrastructures, and with human misery in the global south. We cannot think critically about social media and ICTs without confronting these uncomfortable topics.

If we are to have meaningful public debate

about ICTs and their contribution to climate change, we need to build up public knowledge and encourage critical approaches to these technologies. Such a debate can be initiated through critical engagement with user practices and behaviours, promoting awareness that there are limits to even virtual consumption on a finite planet. Though a focus on individual practice may not be ideal, as it fails to address problematic infrastructures that constrain sustainable choices (Shove 2010), it is a first step toward a more sustainable, ecologically-minded critical engagement with ICTs.

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