

## **What's inside our kit?**

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WHAT'S INSIDE OUR KIT?  
NAHEMI TALKING SHOP CONFERENCE  
JULY 9<sup>TH</sup> 2014

Good afternoon, I'm Chris, I teaching editing at Sheffield Hallam University.

Before I started teaching I cut to documentaries and my first degree is in sociology. Back in the day I used to really love Moviedrome.

Here's what Alex Cox said as part of his introduction to Mad Max 2.

*Mad Max II really should have been forced to file an environmental impact report before beginning shooting. What with all the burning tyres, blazing diesel fuel, wasted petrol and the inevitable amounts of styrofoam cups and flattened beer cans dumped in the desert, Mad Max II - and all its ilk of action films - is a major menace. As are all motion pictures, when you consider the volume of toxic chemicals produced by the processing laboratory and ultimately dumped into the groundwater and sewage system of the unhappy city where the film is edited. Films are a petro-chemical process and a waste-intensive industry, and if this relatively humble film is bad, what about a \$30 or \$40 million explodorama such as Die Hard 3 or Terminator 9. Can you imagine the amount of pollution generated by Arnold Schwarzenegger's camper or by Mel Gibson's Lear Jet?*

*Ultimately, of course, this tirade means nothing. Films are big business, like napalm manufacture or the second-generation Concorde. But to reduce waste in the entertainment business: don't watch big-budget Hollywood movies, which are disproportionately idiotic in their excess; don't ever watch commercials or rock videos, for the same reason; and stay tuned to Moviedrome, home of lower budget, marginally ecologically sounder films! Yay!! COX and JONES (1993) Moviedrome 2: The Guide, BBC*

That was in 1992

The technology of the industry has altered a great deal since then. This velocity of change within the technology, combined with what is in all but name a free market in Higher Education, I think compels us, you me, to have little time for genuine reflection. Asking the questions that you wouldn't ordinarily ask. And I like asking questions.

So. What goes into our kit?

Let's think about some of the raw materials.

- Aluminium. The largest producer of bauxite, aluminium ore, is Australia. I'm sure I don't have to tell you about the treatment of Indigenous Australians white Australian governments. Prof James Anaya working for the The United Nations in 2009, described a an Australian Government policy as 'racist' (ANAYA, *Statement of the Special Rapporteur on the situation of human rights and fundamental freedoms of indigenous people*, United Nations Human Rights, 2009) that's stripped Indigenous communities of their rights and services as part of an investigation into paedophilia. In 2011 Navi Pillay, the UN Human Rights commissioner compared Australia to Apartheid era South Africa (Pillay, *Statement by the United Nations High Commissioner for Human Rights*, United Nations Human Rights, 2011). The developed worlds reaction to South Africa was clear, well publicized boycotts of produce and sport. Yet the no one has suggested that we should boycott aluminum present in so much of our technology.

- Tin. Tin is present in solder. The solder that has held together pretty much every circuit board in existence. Unfortunately the second biggest exporter of tin, after China, is Indonesia (United States Geological Survey Mineral Resources Program, 2013). The Indonesian Islands of Bangka and Belitung produce approximately 90% of their countries tin. Indonesia's national tin corporation supplied tin to Samsung, Foxconn, Sony and LG (BusinessWeek, 2012). The stats and the company names can obscure the human stories. In November 2012 Kate Hodal reported in The Guardian about the life of a miner working in an unregulated mine in Bangka. 44 year old Suge works for about £5 a day in a fifteen metre deep hole in the sand, in August there was a landslide, his shin was snapped in half and his three friends that were working with him were dead. He receives some compensation from his employers but he is one of the lucky ones. Meanwhile offshore dredging for tin has meant that over half of Bangka's coral reefs are in critical condition. In April 2013 Samsung in admitted that is sourced tin from Bangka.

- Coltan. Coltan is an abbreviation of columbite tantalite, an ore from which tantalum is extracted to make tantalum capacitors. It's very good at moving and holding electrical signals, particularly in extreme temperatures. It's particularly prevalent in phones. (ICIJ, *The Illicit Trade of Coltan*, 2012) It's a strategic mineral and it is a conflict mineral, a term applied to the coltan which comes from central Africa, where a lot of production is not controlled by government or corporations but by militia. As with tin mining, a great deal of this is unregulated and involves child labour. (NEST, *Coltan*, POLITY 2011)

- Water. I'm not going to tell you too much about water. Two things – one integrated circuit of 300mm wafer requires approx. 2200 gallons of water, 1500 of that is ultra-pure water. In Africa alone, water.org estimates that 358 million people lack access to safe water, 750m worldwide.

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These are complex global socio-economic issues. And combine international trade policy, regional law, global inequality and climate change.

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What about production?

- Foxconn – Foxconn is the world's largest electronics manufacturer. Intel uses them, Apple (infamously), Cisco, Google, Microsoft and Sony, among others. It has more than 1m employees. It has attracted a great deal of media attention in the last 10 years or so, due to bad working conditions, discrimination and suicide rates.

As well as this, until recently it used hexane and benzene (Associated Press, Apple Bans benzene and n-hexane from iPhone, iPad final assembly, Aug 2014) it's a small part of the manufacturing process. The factories in china that manufacture the iPhones use it to clean the screens. It evaporates very quickly, so they could clean more phones quicker.

But it can cause nerve damage.

Benzene, which is used to clean electrical components, can cause leukemia.

Companies like IBM have known about these links for decades, their manufacturing plants in the states had very high rates of poisoning and cancer after the war and into the '60s. Lots of time and money was spent on studies and increasing workers safety and exposure to the toxic chemicals. They also spent a great deal of time and money in court. (Ladou, *Occupational Health in the Semi-conductor Industry*, Temple Uni Press 2006)

All of that is being shipped to the developing world, where the labour is cheap and governments and local authorities are willing to forego some regulatory rigor in order to reap the economic benefits.

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I also don't want to give you a load of stats. They can be useful.

Particularly when you think about how a single chip requires 1.7 kg of fossil fuels and chemicals, 32kg of water. And to manufacture a standard PC requires 1.8 tons of raw materials. (Williams, *The Three and a half pound microchip: Environmental implications of the IT revolutions*, United Nations University in Tokyo, Japan, 2002)

Those are old numbers, but they aren't reducing.

I'm not going to go into detail about embodied energy, the stats become overwhelming and bringing them down to a manageable level diminishes the complexity somewhat.

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How can we begin to make a difference?

Every hour of TV output is responsible for an average of 7.7 tonnes of carbon dioxide. (Matthews, *BAFTA Sustainability Consortium, Report summarizing our second year*, BAFTA, 2014).

I would like to advocate the use of Albert, within media education in Higher Education. Albert is now the industry standard production carbon footprint calculator and comes with a number of resources that can be used by students aiming to enter the production side of the industry.

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Before we come to my conclusion I would like to talk briefly about e-waste. Unregulated shipping of our electronic waste, which is too expensive for the developed world to recycle safely, is not a new phenomenon.

Lawrence Summers in 1991, then Chief Economist of the World Bank, leaked a memo, 'I think the economic logice behind dumping a load of toxic waste in the lowest wage country is impeccable and we should face up to that.' (Summers 1991) (Puckett, *High Techs Dirty Little Secret*, TEMPLE UNI, 2006)

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So far there has been no Live Aid moment about these issues. There is no single headline or image that can encapsulate the global technology trade supply train combined with the complexities of the various flavours of capitalism used in the east and the economy's need for innovation, advancement and profit. However I believe it is clear that we, as educators, consumers and makes, are morally and ethically obligated to do something and to arm our students with this knowledge.

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I emailed Alex Cox about these issues, and this was his reply.

*Christopher*

*What an interesting subject! Of course you're welcome to use whatever I babbled about Mad Max 2. (We have two of those Mad Max dogs now -- Blue Heelers. The best dogs!) I suppose the obvious conundrum is the fantasy of limitless growth. That there will always be plenty of servers and plenty of bandwidth so that we can look at the tiny minority of films that make it to the internet at any hour of the day or night. Combine that with the big camera companies' constant technology upgrades*

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*SD to HDV to HD to 2K to 4K to 8K and so on - and we are guaranteed to run out of resources sooner rather than later.*

*35mm was dirty technology to the extent of all the chemicals on that celluloid and in the bath. But it was stable for decades, & was a free & international format (a print of Ivan the Terrible could play in Russia or in China or in Liverpool -- no DRM, no "region encoding", no built-in censorship provisions) and didn't end up in landfills the way yesterday's Red Epics and Sonys and Panasonics and Canons do.*

*Is it even possible to be an "ethical" consumer?*

*Cheers!*

*Alex*

*(Alex Cox, 2014)*