

Cradle to cradle

No harder to understand than 'recycling'



Cradle-to-cradle philosophy began with the mantra “waste equals food”, but gradually its proponents have refused even to accept that ‘waste’ has a valid existence. The phrase has become “food equals food”. That means, in a perfect system of full-cycles, at a certain point everything once used either becomes a nutrient for something else, or if it is an environmentally toxic product (say, the electronic parts of a machine) it can be disassembled and the components can be redeployed, harmlessly. In fact, “harmlessly” is the wrong word: they are a benefit because they are locked into a long conservation programme.

When this applies to food, there are some twists and turns. Originally most human food was excreted and “night soil” became a nutrient, not a waste product. Nowadays, when nearly 50% of the world’s people are living in cities, the processing of their rich night soil is usually a treatment that concentrates on putting a distance between that ‘waste’ as a contaminant, rather than recapturing, for example, the phosphates. Phosphate in soil is reaching a critically low level and it may run out even before fossil fuels do, crippling crop production. The human food chain is a perfect example of how once-natural cradle-to-cradle systems need to be restored by new technology.

But when ‘mad cow disease’ anxieties removed animal-excreted “waste” from repeated nutrient cycles too, the “cradleness” of agriculture largely broke down. Tristram Stuart has made the argument for the reinstatement of slurry in his book *Waste* – there is no need for me to repeat it. I want to use an example not of a mind-blowing infection like ‘mad cow’ but of an environment-killing one, which comes in our human-‘waste’ package.

Michael Braungart, the originator of cradle approaches, has been speaking to EU government committees about sucralose in particular and sweeteners in general. The iron rule of biological “cradleness” is that anything which does not degrade and rejoin the biological cycle is unlikely to be

‘nutritional’ for the next user – and very likely to be toxic. His students at the University of Luneberg analysed mothers’ breast-milk and discovered 2,500 chemicals which are outlawed by the EU for imbibing in any other way! Michael laughs but says seriously that breast-milk is also a ‘waste process’, as the process slightly detoxifies the mother.

Sucralose is 800 times sweeter than sugar and when it is excreted in your urine (after that low-calorie cola), waste-water systems cannot filter it out of the effluent. The ‘joke’ is that there are now three kinds of water on the surface of the planet: fresh water, salt water, and sweet water. Except, just as once there was a worry that salt water would contaminate fresh water, now sweet water is contaminating everything and we have no idea of the damage this might do.

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That is not just ‘waste’—it is ‘exponential waste’. A few hundred years ago your urgent deposit of a ‘waste’ product (your pee) might have been gratefully accepted by the plants bordering your backyard pond. Now it might be toxic to the marine and plant life. The global market for sweeteners is about \$2-billion a year for American manufacturers alone, and because natural sugar-growing economies (beet, cane, etc) are not located in the most populated parts of the world, sweeteners are an increasing feature of

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urban life and hard to curb. So along with the urine-waste, water resources are laid to waste.

The Environmental Protection Agency of the EU decided that sweeteners are safe for human consumption, and yet are slow to reach the next conclusion: that everything ‘safe’ for us may not be safely excreted into the environment. Michael Braungart has been especially concerned about sucralose, but now German studies have shown that most sewage treatments cannot detect other sweeteners either – not saccharine, not acesulfame, not cyclamate, not aspartame, not neotame, not neohesperidin, not dihydrochalcone. (You don’t want me to go on.) Removal rates in Germany’s treatment facilities (which are way ahead of the USA and UK) are still described as “limited”. There are better results for removing saccharine and cyclamate than the others.

For cradle protocols, however, the question is not what can be removed

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from water supplies, but the fact that anything which does not biodegrade (regardless of waste treatments) needs to be avoided. Anything we add to our diet needs to be designed so that it does not need to be removed. Instead, the sweeteners are in your local drinking water. (Should we protest and start a campaign against drinking water, just as the 'take-tap-water' campaign in the UK has been won?) Increasingly they are in the 'fresh' water on which food plants and animals rely and may be slowly changing the character of farm-soil and rivers. For ground-surface water, acesulfame is a critical concern. Perhaps scary research regarding the re-ingesting of the sweeteners – say, "sweet water" mixed with babies' milk formulae – is on the horizon.

There is no way for you to buy local fish "free from" this problem, because we don't even grasp the impacts yet. The cradle advice is just to stop the use of anything like sweeteners which will not rejoin the biological cycle – at least, Michael Braungart says sadly, "while the research machinery keeps rolling". His hope rests with big real-sugar companies highlighting the effects, but some of those companies themselves now have a supplementary line in sweeteners. Cradle to cradle is not opposed to artificial sweeteners per se, but we are distressed by anything which is put in the food chain and disrupts it. Michael's phrase for this is "chemical harassment". When he is thirsty he has no option but a glass of tap-water that has been "sweetened" for him.

Unlike the rest of the waste industry, and most environmental campaigns, cradle to cradle does not start with the "free from" position. The food products carrying sweeteners succeed because they are "free from" calories which conventional sugars produce. If you want to do waste issues from our standpoint, you begin, instead, by positively identifying what is there – not by finding novel solutions to its incineration or ways in which it can do

'less' damage. It is the years of slapping ourselves on our own shoulders and saying "no lead" or "no salt" which have created a deluding "ecologism" where doing-without is the solution. Look at what you are doing, not doing without.

Of course there are 'transitions' in this cradle-emerging economy. A waste issue for food packaging (which remains about a quarter of household waste in Western economies) is food packaging. PLA (polylactic acid) is what the food industry should use because it is biodegradable, but PLA comes from the same food-resource (maize) on which we rely for food itself. In some places, of course, the packaging production will compete with the hungry children. There

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should be no competition between PLA production and food production – that is as misconceived as using maize and farmland for biodiesel. At the moment, there is no technology to 'up-cycle' PLA either – and we are working on it.

Twenty-five years ago Michael, who founded the international chemistry division of Greenpeace, was asked by the German Parliament for advice on PVCs (polyvinyl chloride), the world's third most-used thermoplastic polymer. His advice was the same as his advice for sweetener manufacturers: just stop. After 25 years the German government decided to ban PVC... in toys for children under the age of three! Meanwhile, it leeches into our diets, it is an endocrine disrupter, and

it is increasingly implicated as a cause of obesity in children.

These are not "waste" issues (dispensing-with, or eradicating issues). The only approach is to identify what we have – not to incorporate anything into our stomachs and our environment if, like PVCs, it is not part of the technical cycle, or if like sweeteners, not part of the biological cycle. There are now cosmetics companies where enlightened research departments flip into cradle mode, but most of the converts have been in manufacturing. There are no food companies that accept the whole agenda yet, unfortunately.

Michael Braungart does not want this to be a problem where ethics become accusing. There is, however, no governmental agriculture, fisheries, food or environment department that crosses the threshold of these issues. (The solutions are not simple, but creating the research funding is.) Michael says that we have shown no ambition with de-constructing the very concept of "waste".

The bar is too low. "Less waste" is no answer, nor is more efficient recycling. Nor is reducing production to a minimum so that we stop the creative, economic cycles that have built better products, kept supermarket fish in remarkable condition, given us wrapped cheese that tastes almost the way the way that god makes it in Parma, and provided infants with safe powdered-milk. It is a steep curve for the food waste-industry, but the next step is to take on the wider concerns -- those concerns for the environment as a whole and (as cradle chorus goes) "for our children's children". ■

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