Can the construction industry embrace the concept of the circular economy, where materials are continually reused? Pamela Buxton joins a round table of experts to consider the issues.

Apple last year launched a recycle and reuse service for its products in the UK that guarantees responsible recycling plus money back if the item still has some value. This February, the pop star Pharrell Williams unveiled a range of jeans made out of the plastic waste clogging up our oceans.

Where are the equivalent effective and alluring solutions for the built environment? How can developers, designers and users be encouraged to engage in fundamental changes to their processes and habits to enable truly sustainable practices? And how can concepts such as the circular economy and cradle-to-cradle (C2C) be best communicated?

These were some of the issues aired in the Armstrong round table debate Sustaining Construction – Green Strategies for the Built World, chaired by RSA chief executive Matthew Taylor with an invited panel of design, sustainability and materials experts.

First, some definitions might be helpful to navigate the terminology and jargon surrounding the subject: instead of the conventional linear model of take, make, consume and dispose, the model for a circular economy is restorative, with materials designed to circulate in a continual cycle of production, recovery and remanufacture with their economic value preserved or

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enhanced. Cradle-to-cradle (C2C) design can be thought of as the practical application of this concept, a method of supporting design that has a positive effect on the environment and society. In doing so, it embraces the design of products that can be recycled, uses increasing amounts of renewable energy and embraces local diversity.

These are complex issues, not helped by the profusion of green accreditation schemes and all-round greenwash that muddy the waters when it comes to thinking of what constitutes a ‘good’ sustainable product. There are more than 100 self-certification and labelling schemes on the market according to Jeremy Sumeray, who is leading the C2C programme at Armstrong, which has pioneered ceiling recycling. The variety of labelling schemes makes it much harder for specifiers to make informed choices. C2C has the advantage, however, of being a relatively easy and engaging concept to convey, which appeals to specifiers’ and users’ personal values as a pathway to good. It also, he said, ‘fundamentally forces us to think about what and why we’re designing’.

Clash of concepts
Sometimes circularity and some aspects of sustainability, such as adaptability, can appear to clash, according to Sophie Thomas, project leader of the RSA’s recent The Great Recovery Project. This identified four different design models for the circular economy: designing for longevity; leasing; reuse in manufacture; and material recovery.

‘Do you design space for adaptability and longevity, or for recycling?’ she asked.

But there does appear to be a sea change in attitudes away from the linear model of production, as demonstrated by firms such as Apple, according to Duncan Baker-Brown.

“That’s what we should be doing with our buildings,” he said. ‘More and more people understand we’re in a linear model and need to do something about it.’ But he remains concerned at the high level of building demolition rather than reuse.

Baker-Brown has recently, with students from the University of Brighton, designed the Waste House, the first permanent building to be designed from waste, including discarded plastic from construction sites.

‘I say there is no such thing as waste, just things that are in the wrong place,’ he said. ‘The clever money is on avoiding buying new stuff and avoiding throwing things away.’

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‘There’s a lot to be said for keeping things simple on all levels,’ said BDP’s David Cash, who like Baker-Brown also called for a greater emphasis on building reuse.

C2C will require a complete rethink in how designers and architects design, since the building or object is no longer the end product. Instead, there is no end product, rather a continual loop of use, reclaim and reuse. It’s clear that far more thought needs to go into designing for disassembly, whether for a fridge or an office block. Clearly designers are going to have to engage far more with the nitty gritty and, as Cany Ash puts it, with the mundane.

The RSA’s Sophie Thomas evocatively described visiting a fridge recycling plant and wishing the designers were there to witness the huge physical efforts needed to disassemble their fridges — some as little as six months old — into components and materials that could be fed back into the design process.

Vincent van der Meulen, who is at the forefront of C2C in the Netherlands, talked about the need to design ‘backwards’ with disassembly and reuse in mind, and for architects to learn how to speak the same language as those who end up dealing with the building parts.

Problems of identification

Several participants raised the issue of identification when it comes to dealing with building materials and components after their first use is over.

‘A major problem is knowing what’s in a building so that you can know what the material is and what grade it is,’ said materials expert Ian Hunter.

Better identification would facilitate more efficient reuse, he argued, especially if you want the material to retain its value.

Sophie Thomas raised the idea of a ‘reverse BIM’ with digitally coded materials so that 50 years or so later, people would be able to understand what they were dealing with. Duncan Baker-Brown agreed that this barcode approach would be particularly helpful for retrofits.

‘We need to not see the building as a monolith but [instead] understand the layers behind it,’ he said. He also favoured the use
Another important strategy raised for C2C was the potential of designing for leasing, where manufacturers take back their products at the end of their lifespan. These already include carpet tile manufacturers, which offer customers a leasing option and recycling the product at the end of its life.

Matthew Taylor asked what business models would encourage more sustainable practices, and wondered whether a top-down approach was the answer.

Jeremy Sumeray advocated a ‘one mind at a time’ step-by-step approach with leadership from within the business, though not necessarily from the very top. Though slow, this can be a really powerful way of altering practices at a time when, he said, the market is looking for things to change.

It is also imperative, said BDP’s David Cash, to challenge the idea that sustainable buildings necessarily require more capital cost. To the contrary, agreed Jeremy Sumeray, low-impact materials can often be low cost. And the more we learn how to reuse, the less new raw materials we’ll need to buy, said Duncan Baker-Brown.

Cany Ash commented that the design community had less power than it used to in the procurement process. Architects certainly do have to work hard to convince clients of the merits of a more sustainable design, as Vincent van der Meulen related, describing a project where he managed to reinstate sustainability elements that had previously been cut, by making a business case of the savings these measures would bring over 40 years.

Government’s role
What of the government’s role in promoting more sustainable processes? Several of the participants felt there had been a backtracking and loss of momentum in the last few years in terms of investment and innovation in sustainability.

‘Industry and government don’t have those conversations,’ said CBRE’s Neelum Mohammed. ‘The confidence has gone.’

BDP’s David Cash felt that if the voting public wanted to see sustainability high on the political agenda, then it would happen. But Matthew Taylor felt the public didn’t want too much noise about sustainability – they just wanted the government to get on with it.

Richard Francis of Monomoy Company wondered if technology could be harnessed to make C2C concepts appealing in a non-technical way to those who occupy the buildings, perhaps by using digital technology to map internal spaces and their sustainability credentials.

Sumeray generally felt that it was up to business to take the lead and work harder to promote C2C.

‘We rely on government too much to lead the way. The answer is in our hands… If we could see more leadership in the UK on developing the circular economy and circularity, it would bring some momentum,’ he said.

It’s clear that a revolution in attitudes is still needed. But this can happen, as proved by the recent legislation and shift in mindset towards smoking, said Matthew Taylor.

Maybe the answer, he speculated, is a combination of many approaches rather than one, in order to facilitate the massive change in thinking needed to encourage more circular practices – not only top-down regulation but innovation and creativity and a philosophical change that can win over both hearts and minds.

Perhaps the last word should go to Duncan Baker-Brown, who quoted US sustainability expert Neil Chambers: ‘If people say [sustainability] will cost more, get them to try harder. And if they can’t, get someone who can… There are people who know how to do it and people who don’t. The ones who know will be the ones making the money.’