

SAVIOLA TALKS (DAVIDE CHIARONI, FULL PROFESSOR OF STRATEGY AND MARKETING, POLIMI) THERE IS RECYCLING AND RECYCLING! THE CHALLENGES AND OPPORTUNITIES OF 'CIRCULAR' RECYCLING



Davide Chiaroni

Energy & Strategy, Polytechnic of Milan

I realise that this may seem a contradiction, all the more so in a context such as an Italian one, where the word 'recycling' is often mistakenly used as an integral synonym of Circular Economy, but I am deeply convinced that there are two types of recycling, the 'linear' one (i.e. associated with the traditional economic model) and the 'circular' one, and that it is more necessary than ever to embark on a path of transition towards the second.

I will try to explain myself better. Recycling, which I call 'linear', is first of all characterised by the fact that it is considered as a phase of 'waste management' (and already this should raise some doubts about its adherence to the principles of the Circular Economy) and furthermore, it suffers today from three major limitations.

(1) With very few exceptions, this is actually downcycling, a technical term in the Circular Economy that highlights how the value of the recovered material is typically lower than its original value and as such destined for much less profitable uses. And this applies to paper (and we all have experience of the difference between virgin paper and recycled paper), to plastic (which in its recycled polyethylene form has significant limits in its use), to glass (if we consider in particular the most valuable glass or the so-called "brown" glass used in cosmetics and pharmaceuticals), and also to steel and wood – with some exceptions, such as those represented by Saviola, but which we will return to later – which often end up, after recovery, in uses less noble than those for which they were originally placed on the market. Downcycling, by reducing the value of the

output, forces one to look for scale mechanisms to reduce recycling costs that make the processes even less 'qualitative'.

(2) It is a system that operates, to use the metaphor of the sieve, with 'wide', indeed 'very wide' meshes. A household appliance that comes to the end of its life cycle today and goes through the normal (I would say linear) metal recovery and recycling process allows iron and aluminium to be recovered (for a value of around 200 €/tonne), while letting for example Neodymium 'go through', a very important material because it is classified among the 'rare earth elements' and has several uses in electric motors (e.g. car motors), which instead has a value of over 40,000 €/tonne. Mind you, 'let it pass' because the process is designed, as mentioned earlier, to minimise recycling costs and increase the scale; therefore, it must be able to quickly process products (that have become waste) from many different categories.

(3) This is a system that is still largely regulated and standardized on the basis of the "origin" of the material and not its nature. And so the same object (e.g. a computer or a printer or an X-ray machine) coming from a hospital or a machine shop will follow different paths and have to be treated differently. It is quite clear that this does not make sense from the point of view of 'material' and 'components' (i.e. if we assume the perspective of the Circular Economy), whereas it is entirely consistent with the 'linear' view of having products end their life cycle in line with the 'line' against which they entered the market.

What does a 'circular' recycling system look like then?

It will, I think, be evident to the reader that this must be designed to overcome the above-mentioned limitations. (1) Starting, first of all, with the creation of upcycling opportunities, i.e. the full (or even higher) restoration of the value of the material collected and 'put back into circulation' in a production system that can fully exploit it. (2) Setting up an ad hoc process that is able to meticulously separate the different materials on the basis of their nature, sending them to dedicated treatment paths, and bringing them back to a condition that can naturally (and in a circular manner) reconnect with the production process of the 'new' products. (3) Reconstructing a collection ecosystem that is based on the 'nature' of the material to be recycled and not so much, or at least not exclusively, on the type of economic actor that has possession of it before its end-of-life - while respecting the limits imposed by the legislation, and while waiting for this too to finally evolve.

It is not difficult to read these characteristics in the extraordinary example of the Saviola Ecological Panel, with the history of product, process and ecosystem innovation that is linked to it. And above all, understand the differences with the 'linear' recycling model.

We definitely need, as I said in my introduction, more examples of this kind and finally Europe - and hopefully Italy soon too - has realised this, with the recent Waste Framework Directive, Circular Economy Action Plan and Critical Raw Materials Act. Only a 'circular' recycling system will allow our economic system to be sustainable, both environmentally (by finally containing the need for new resources) and economically (by valorising, rather than depleting, the resources we already literally have 'in our hands' as products). The challenge for all of us is to make this transformation happen in time.