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What critical mapping of communities/disciplines and recycling flows in urban metabolic research?

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Proceedings

This contribution aims to question the place of recycling and reuse in metabolic studies, by deciphering how various scientific communities, such as the UPE, political-industrial ecology, STS, territorial ecology etc., are taking up these issues.

We started to work on the link between recycling in the perspective of the growing importance circular economy policies, and research into urban metabolism, with which we are very familiar.

It showcases an epistemological study that transcribes the multiple meanings of the notion of metabolism, to better situate the place of recycling and reuse in this field.

It doesn't sound very new, and you'd think everyone would have the same definition of recycling... but no, there are some surprises.

We worked with the scopus database, which has a lot of flaws but is fairly complete, and VOS viewer, a free bibliometric landscape analysis software with the search string

TITLE-ABS-KEY ("urban metabo*") OR TITLE-ABS-KEY ("social metabo*") AND ALL (recycl*) OR ALL (reus*)

We obtain 671 documents (articles or book chapters)

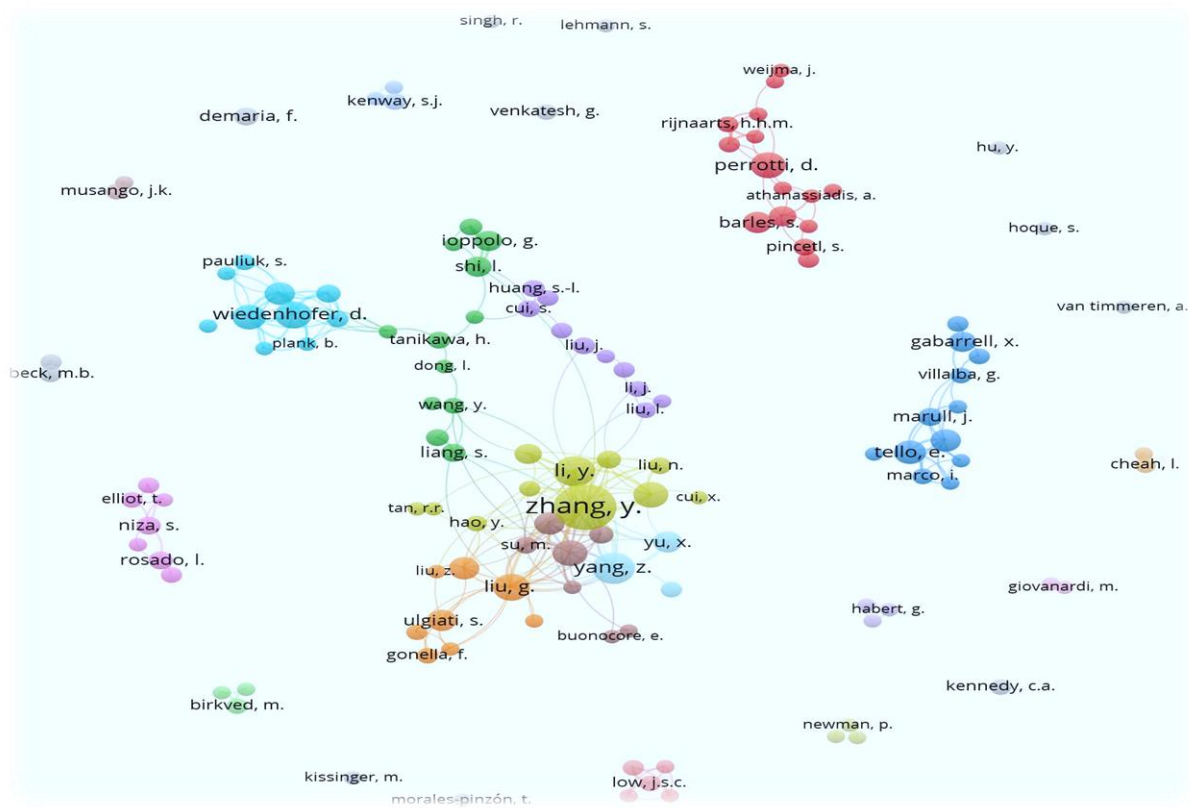


Figure 1: Scientific landscape analysis - Co-authorship map based on bibliographic data (Source: Scopus; Realization: VOSviewer - Copyright © 2020 Centre for Science and Technology Studies, Leiden University) – visualization of scales according to the n

For the School of Industrial Ecology (in the center) and in particular Yan Zhang from Beijing, the challenge remains the fine quantification of recycled waste. And recycling and reuse are equivalent treatments like others, including energy recovery. She makes recommendations along the lines of "governments must step up recycling, as waste plays a major role in urban metabolism".

There's also research into the environmental assessment (through life-cycle analyses) of material flows and recycling in particular. These show that recycling is better than incineration, and that recyclable materials are better than primary materials by substitution...

It isn't very surprising, except that they add that it doesn't matter where the recycling takes place, because processing has a much greater impact than transporting waste. Which means that, from an environmental point of view, it's a kind of legitimization of global waste transport.

For Vienna's social ecology (Wiedenhofer in blue), on the other hand, their critique of recycling as an ecological economist shows that recycling activities destroy the integrity of products and therefore do not contribute to maintaining product value at the highest possible level. In addition, they explain that it is often wrongly assumed

that closing loops through reuse and recycling automatically reduces demand for primary resources, but this is not the case. There is no substitution, only addition or accumulation.

For urban/territorial ecology, and Sabine Barles in particular, when we look at urban metabolism as a whole, recycling is very little... and it is absolutely essential to differentiate between local and global recycling. In addition, public policies are very focused on recycling (particularly packaging), which seems to be a poor choice for generating real dematerialisation.

And for Pincetl, recycling as a link in ecological inequality between rich and poor countries (recycling from Los Angeles is sent to China by container, “simply transferring the human burden of reclaiming resources to another country”

For Goldstein, Blrkved in purple for political industrial ecology, the material footprint of recycling is a multiscale issue exerting pressure at the city level and beyond.

Then, we focus on the role do recycling issues play in political ecology of metabolism.

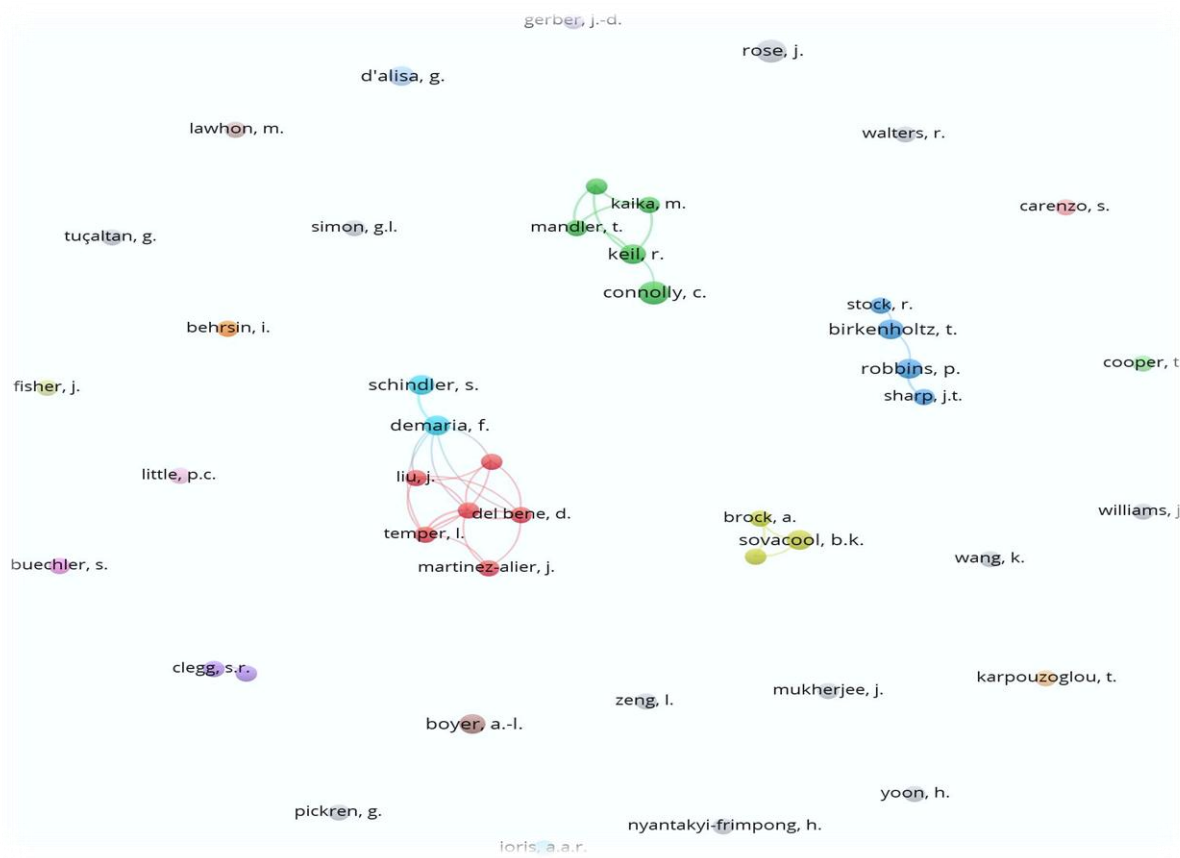


Figure 2:: Scientific landscape analysis - Co-authorship map based on bibliographic data (Source: Scopus; Realization: VOSviewer - Copyright © 2020 Centre for Science and Technology Studies, Leiden University) – visualization of scales according to the

For the Barcelona School of Ecological Economics, notably Martinez Alier, the economy cannot be circular, it is entropic. When the economy grows, all the inputs increase. And this creates ecological conflicts. These conflicts can be explained by changes in the social metabolism, including more extraction and waste treatment infrastructures (including industrial recycling).

On the subject of conflicts, Demaria in Antipode makes a superb analysis of the intertwining of formal and informal recycling, which gives rise to an unlikely alliance around recycling between formal and informal wastepickers and the middle classes who are concerned about air quality.

In UPE, Castan Broto and Guibrunet highlight the role of informal recyclers in globalised resource circulation, even if public policy tends to regard them only as a negative influence on the urban management system

Other studies from Keil quoting Amuzu have looked at the location of recycling infrastructures on the periphery (more or less far away, in the case of Ghana) and the financialisation of these infrastructures by global actors.

Nate Millington, Kathleen Stokes and Mary Lawhon worked on the creation of value in waste recycling: who pockets the profits? who does the work? what are the negotiations, power relations and disputes?

Behrsin investigated the case of waste recovery from Italy for incineration in Austria, with heat recovery. These particular but interdependent metabolisms and territorialisations have hampered more socio-ecologically sustainable alternatives and, in some cases, democratic reuse and recycling initiatives.

Science and technology studies (STS), Sovacool shows the importance of the multi-site approach to understanding the environmental impact of renewable energies in the recycling process (elsewhere, known as sacrifice and peripheralisation zones).

The understanding of recycling is therefore not as straightforward and smooth as we might have imagined.

It covers a number of major themes, including environmental assessment and quantification, political economy, infrastructure-related conflicts, the identification of inequalities within the city and between territories, the role of very different players in the recycling chain with strong power relations, and the financialisation of recycling.

Now empirically, when we try to examine recycling as part of research into territorial metabolism, this leads us to consider the issues involved in mapping the flows of reuse, recycling, in terms of their spatial, quantitative and political dimensions.

The issue lies in the production of data, by whom, when and how, according to the different communities presented and their divergences.

In the Comoros, for example, the authorities and economic services only know about and measure the flow of exported recyclables.

But when we ask the communities, they tell us about vernacular recycling practices, such as carpets made from the remains of plastic sandals, recycled bags made from recovered fabrics, pots made from aluminium cans, cardboard bricks for fireplaces, tablecloths made by women's groups from used textiles. Most of these are made by women on an informal working basis.

The quantitative study of urban metabolism shows, for example in this research in a French city, that recycling represents almost nothing compared to consumption, emissions or the accumulation of materials, even though public policies focus on it.

there is no public policy on the de-accumulation of stock and the fate of this stock as construction waste, even though this is the largest volume in the city.

The other cliché about recycling is that waste is reused locally, whereas when we follow the flows of recyclables, they are collected in cities, then grouped and pre-treated on the recycling platform, transported to ports to follow the maritime routes of the global circulation of resources.

Furthermore, most urban waste does not even pass through the city: these are the hidden flows linked to the objects and goods consumed, which involve the production of waste during the extraction and manufacturing stages.

In conclusion, we have seen that the theoretical approach shows us that recycling is a complex, multi-input subject in research into urban metabolism.

From a more empirical point of view, there are some major issues at stake in the metabolic mapping of recycling

Who produces reliable data, and how to obtain it?

there is a issues to show other, more political dimensions at the interface between scales.

and there are issues of representation of radical cartography such as the work of this coordination of associations against the construction and waste of the Olympic Games.