

CRADLE TO CRADLE IN URBAN PLANNING

Putting eco-effectiveness into urban planning practice

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ABSTRACT

Cradle to Cradle is a well-known sustainability concept introduced by Braungart and McDonough. It is a concept about how a product can be designed from the outset so that, after their useful lives, they will provide nourishment for something new, thus “waste equals food” (Braungart and McDonough, 2002). This eco-effective principle has been applied widely in products development; however, it is less known in the urban planning discipline where sustainable development is the main ‘key word’ in transforming the urban area. The question that this paper expands on is whether it is possible to apply the Cradle to Cradle concept into urban planning practice. This article explains the difference between the eco-efficient concept and the eco-effective concept and elaborate from there on a possibility to apply the Cradle to Cradle principle to urban planning practice. It is shown that the Cradle to Cradle principle offers an instrument for bringing complex sustainable concepts within reach of planning thinking and discussion, and for generating alternatives which may not otherwise be given serious consideration.

Keywords: Cradle to Cradle, Eco-effective, Urban Planning.

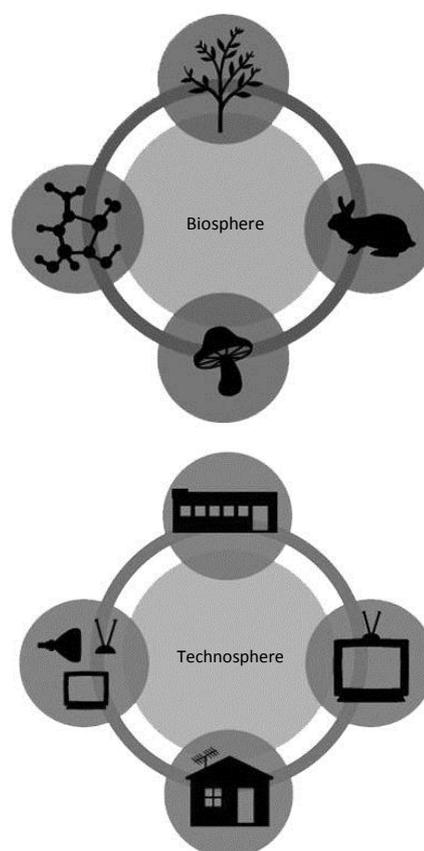
INTRODUCTION

Since the 1970's, more attention is given to the spatial quality and sustainable development in urban planning (Hidding, 2006). Today, sustainability and environment awareness are not only areas for “the green activist”. There is much more attention for sustainability in the media. Even the government and private sectors feel more involved in sustainability and play a bigger role in it.

One of the new ways for sustainability is the “Cradle to Cradle” principle from Braungart and McDonough (2002). Cradle to Cradle, as an eco-effective concept, is famous for its theory on recycle in which all used products after their useful lives phase will provide nourishment for something new in the biosphere. Thus “waste equals food”. Or they can be “technical nutrients” in the technosphere that will continually circulate as pure and valuable materials within closed-loop industrial cycles, rather than being “downcycled” into low-grade materials and uses (see Fig. 1).

In spite of the fact that the Cradle to Cradle principle has been widely applied in the discipline of product development with focus on recycling and use of materials (e.g.: Nike considered shoes, Rohner Textile AG Climatex-textile, Herman Miller office chair, floor covering, roof, lighting, etc. (MBDC, 2011)), this principle is less known in process-oriented disciplines such as urban planning (Matahelumual, 2009). In fact, focusing only on material recycling raised criticism from Zeeuw (as

cited in Bijsterveld, 2008) and Schmidt-Bleek (as cited in Unfried, 2009), whether this concept can be realized on a big scale.



Source: Burke, 2008.

Figure 1. Close-loop cycle of Cradle to Cradle

However, unlike other sustainable development principles, Cradle to Cradle is not just about zooming out recycling the waste and generating energy. Cradle to Cradle principle goes beyond that. It goes deeper into the process of making an urban area that involves a lot of immaterial products. Therefore in applying the Cradle to Cradle principle into the process of city planning, it is more interesting to focus on the “process” guiding principles of Cradle to Cradle, the eco-effective transformation principles, rather than just focusing on the life-cycles of the material products. This article is an effort to explain how to put this eco-effectiveness into urban planning practice.

ECO-EFFECTIVE: NATURE INSPIRED CONCEPT

At the 1992 Earth Summit in Rio de Janeiro, many industrial participants touted a particular strategy: eco-efficiency (Schmidheiny, 1992). Primarily, the term means to consume and to produce less by minimizing, avoiding, reducing and sacrificing. The goal is zero: zero waste, zero emissions, zero ecological footprint. As long as human beings are regarded as “bad”, zero is a good goal.

Eco-efficiency is an outwardly admirable and certainly well-intended concept, but, unfortunately, it is not a strategy for success over the long term, because it does not reach deep enough. It works within the same system that caused the problem in the first place, slowing it down with moral proscriptions and punitive demands. Relying on eco-efficiency to save the environment will in fact achieve the opposite-it will let industry finish off everything quietly, persistently and completely.

On the contrary, Cradle to Cradle is an eco-effective concept. A concept is inspired by nature. The eco-effective concept seeks to design industrial systems that emulate the healthy abundance of nature. It is a shift in perspective, from the old view of nature as something to be controlled to a stance of engagement. The central design principle of eco-effectiveness is “waste equals food” (Braungart and McDonough, 2002). Thus, instead of just using the natural resources efficiently, it creates another creature in the eco-system that blends smoothly in the nature and even produces abundant resources for another creature. Being energy efficient is just a side effect of the main design goal. It is not just efficient in using the natural resources, but it is effective. From an industrial-design perspective, this means products that work within cradle-to-cradle life-cycles rather than cradle-to-grave ones.

ECO-EFFECTIVE URBAN PLANNING

Traditionally, spatial planning or urban planning has had a strong focus on the physical planning result. It was basically concerned with the location, intensity, form, amount and harmonization of the land development required for the various space-using functions (Albrechts, 2006). However, due to new challenges, the ever more complex problems, the emerging environmental and social considerations and the increasingly active population groups defending these values and/or their own local interests, the implementation of master plans became increasingly problematic (Tosics, 2003).

A modern urban planning is as much about the process, institutional design and mobilization as about development of substantial theories (Albrechts, 2001). In contrast to traditional urban planning, more recent planning approaches focus on the participation, communication and interaction of the various stakeholders involved in the planning process (De Kort, 2009). Therefore, in applying the Cradle to Cradle principle to urban planning, it is more interesting to focus more on the *process oriented* principles of Cradle to Cradle: the eco-effective transformation guiding principles, rather than just focusing on the life-cycles of the material products.

The following five eco-effective transformation guiding principles can help the urban planner at every stage and improve the odds of success in transforming an urban area:

1. Signal your intention
In achieving the goal, choose a new paradigm instead of incremental improvement of the old. Thus in planning or transforming an urban area, do not choose an old model to make something a bit more efficient, but go for a new effective model. This demands a clear vision that has to be clearly communicated to all affected actors, so that everybody can see and understand the intention of development direction of the urban transformation. It is also important to send not only a signal about the transformation of physical materials but also about the transformation of values.
2. Restore
A new model does not mean destroying everything that is old. It is important to struggle for a good growth from a local basis. In other words, design a neighborhood with “restoration capacity”. This can be done for example by using good functioning cultural history or nature elements as “carriers” for the urban transformation. These elements usually have an outstanding “restoration capacity”. For instance, using the success prin-

principles of an “old high street” strip for the new development of an area, has proven that it can restore itself and stay livable; or restoring the original structure of a natural feature can create more space for other nature elements, which in turn can improve the quality of our urban environment or even mitigate natural disasters.

3. Be ready to innovate further

Restoring does not mean that we stop in time and do not innovate anymore. Do not focus only to the basic activities, but provide room for innovations, experiments and adjustments to new situations.

Urban development is often a long term process. Due to the complicated permission trajectory, it takes years before a plan can be realized. By the time that the plan was finished, the community has changed and the new social trend had been emerged. Therefore, a modern large scale ‘zoning’ planning will, after some years, be left behind. This makes the plan quite stiff and inflexible.

On the contrary, a small scale growth planning gives more room for adjustments and further innovations during the process. In this way, we can create a neighborhood where the land use and functions are not fixed, but flexible and multi-functional. By providing possibilities to change the destined function or division of the plots when it is necessary, the neighborhood will be ready for the change in the future and goes with the time. This will stimulate diversity and mixed function, so that the livability of the neighborhood can be maintained.

4. Understand and prepare for the learning curve

Innovation requires openness to the signals from the society, the environment and the world. It is not a top-down process, but it is the result of communication with all parties. In terms of Mc Donough & Braungart (2002): “be open for feedforward, not just feedback”. Thus understand these signals and keep learning from them.

It might not be easy to recognize that change can be difficult, messy, and take extra materials and time. But it is important to provide a room for adaption and innovation. It requires a “loose-fit”-room for growing a new way. Rather than spending time and money fine-tuning an existing plan, for example, a planner might also be designing another *future-oriented* plan at the side, an innovative plan based on “feedforward” from different disciplines, technology, nature and society.

5. Exert intergenerational responsibility

Last but not least, one of the main goals of sustainable development is to design a neigh-

borhood where the basic needs of the future generation can be guaranteed. One of the ways to do so is by trying to be self-sufficient (autarky) in the basic needs of our modern society, such as in food, water and energy.

The self-sufficient food supply can be done for example by creating city farms or stimulating urban agriculture and city gardening. The city inhabitants can use “left-over” space to generate their own food. In this way, not only many families can (partly) fulfill their nutrition needs, but it also can stimulate local economy or even social cohesion in the neighborhood.

Next to the food, the availability of clean water for future generations should be guaranteed. This can be done for example on one hand by applying sustainable water recycle principles in the neighborhood and on the other hand by introducing awareness of efficient water usage to the community.

The availability of energy is another important factor for our future generation. Thus it is necessary firstly to reduce the demand of energy in an urban area, for example by designing a neighborhood that encourages walking and sustainable transport systems. Secondly, we need to strive for the use of sustainable energy resources like wind, solar power and water within the neighborhood. And thirdly, we need to stimulate the community to use fossil fuel energy as efficiently as possible (Duijvestein, 1997).

These 5 principles of eco-effectiveness are process-orientated and focus more on the participation and communication between the planners and the society. In this way, the Cradle to Cradle principle can be applied better into the modern urban planning process.

The exact elaboration of these principles into projects on the ground will be a tailor made task for invention and design, but the theoretical principle allows this design work to track potentially productive pathways. One of the first examples of applying the Cradle to Cradle principle to urban planning has been done in the city of Almere, one of the satellite towns of Amsterdam (Feddes, 2008). However, it will take years before we can evaluate the impact of this eco-effective planning in this town.

CRADLE TO CRADLE AND THE PLANNING DISCUSSION

At first sight, it seems that Cradle to Cradle can offer only a limited solution for urban development,

but when we go deeper into its eco-effective vision in a broad way, it gives possibilities. It suggests a different approach on the problem of planning sustainable cities, which may direct us to ways of making socially and economically sustainable environments.

A good sustainable solution does not stop at the 'hardware' but involves also the 'software' in its process. In this way, the planner will not be restricted to solutions which only focus on the system- or material-recycle, but will go beyond that and consider the whole context around it. The eco-effective vision not only can function as a holistic economic and social framework that provides an umbrella for other sustainable methods in urban planning, but also provides a transformation tool that focuses more on the participation and communication between the planners and the society.

Acknowledgement

I would like to thank my former MSc-student, Simon Matahelumual from Wageningen University, for his initial research contributions in this subject.

REFERENCE

- Albrechts, L. (2001). In Pursuit of New Approaches to Strategic Spatial Planning. A European Perspective. *International Planning Studies*, **6**, 293- 310.
- Albrechts, L. (2006). Bridge the Gap: From Spatial Planning to Strategic Projects. *European Planning Studies*, **14**, 1487 - 1500.
- Bijsterveld, K. (2008). 'Cradle to Cradle is een dwaal-spoor', Friso de Zeeuw en Fred Schoorl relative-ren potentie Cradle to Cradle. *Duurzaam*, **3**, 8-9.
- Braungart, M. & McDonough, W. (2002). *Cradle to Cradle: Remaking the Way We Make Things*. New York, North Point Press.
- Burke, K. (2008). *Sustainable Architecture Forum*. Rotterdam, Van Nelle ontwerpfabriek. 5 November 2008. Keynote address.
- De Kort, I. (2010). *Designing a Strategic Plan Development Approach for Integrated Area Development Projects*. Enschede, Gildeprint Drukkerijen
- Duijvestein, C.A.J., (1997). *Inleiding Ecologisch Bouwen*. Amsterdam, WEKA Uitgeverij.
- Feddes, F. (Ed.). (2008). *The Almere Principles*. Almere: The Municipality of Almere.
- Hidding, M. (2006). *Planning voor stad en land*. Bussum: Coutinho.
- Matahelumual, S. (2009). *Cradle to Cradle: van Hype naar Hulpmiddel*. A master thesis in Wageningen University.
- McDonough Braungart Design Chemistry. (n.d.). *Cradle to Cradle Design*. Retrieved July 5, 2011, from <http://www.mbdc.com/>
- Schmidheiny, S. (1992). *Changing Course: A Global Business Perspective on Development and the Environment*. Cambridge, MA, MITPress.
- Tosics, I. (2003). *Strategic planning in European cities*. Consultancy for the Institute of Urban Economics, Moscow. Metropolitan Research Institute, Budapest, July 2003 (manuscript).
- Unfried, P. (2009, March 7). Der Umweltretter Michael Baumgart. *Tageszeitung*. Retrieved September 9, 2011, from <http://www.taz.de/!31442/>.