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Compost Toilets and Permaculture Design Principles

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contribution to book (in French) on compost toilets

by Christophe Elain

Un petit coin pour soulager la planète:

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Compost Toilets and Permaculture Design Principles

Over many years, I have noticed the passion and enthusiasm for compost toilets by permaculture activists and designers. This even extends to dinner table conversations. Given the broad scope of the permaculture concept why should recycling human waste at home receive so much attention?

Permaculture is a design system for sustainable living and landuse conceived by Bill Mollison and myself in the 1970's¹. It focuses on providing people's needs close to where they live from natural resources and processes while minimising the need for non-renewable resources. Permaculture is also a process for changing our perception of personal, household and community needs so these can be met within ecological limits. It incorporates a diverse range of traditional and innovative strategies, methods and elements.

Compost toilets are a simple technology that has been successfully used in both urban and rural situations across a wide range of climates. Perhaps their importance in permaculture can be explained by briefly outlining how compost toilets both illustrate and reinforce our understanding of permaculture design principles.²

1. Observe and Interact

In contrast to the flush toilet connected to a remote sewerage treatment system, compost toilet encourage us to pay attention and understand ourselves as part of nature.

2. Catch and Store Energy

By avoiding the dilution of wastes with clean water, compost toilet catch and store the valuable plant nutrients (energy) from human wastes in a relatively stable form.

3. Obtain A Yield

In generating a useful garden fertiliser, the compost toilet makes productive an everyday activity.

4. Apply Self Regulation and Accept Feedback

By observing some simple management constraints in what we put into a compost toilet, we avoid negative feedback from protesting microbes in the form of odours, uncomposted material or excess compost liquid.

¹ Mollison, B. & Holmgren, D. Permaculture One 1978 Corgi

² Holmgren, D. Permaculture: Principles & Pathways Beyond Sustainability 2002 Holmgren Design Services



5. Use and Value Renewable Resources and Services

Human waste is the essence of a renewable resource. The microbes and compost worms are workers providing free ecological service. In adding the compost to the garden we feed similar organisms providing plant nutrition which science now accepts is largely a service performed by soil microbes.

6. Produce No Waste

The compost toilet eliminates waste by dispensing with the flush, recycling otherwise noxious waste and excess fibrous material to sweet smelling humus.

7. Design from Patterns to Details

As with collection of rainwater, passive solar design and other elements of ecological building, the siting and construction requirements of compost toilets must shape the concept stage of building design rather than being seen as plug in technology at the end of the process.

8. Integrate Rather Than Segregate

By processing human waste in residential buildings and gardens, compost toilets dramatically illustrate the integration of functions and land uses. This integration reverses the historical segregation of functions and land uses which has dominated industrial society.

9. Use Small and Slow Solutions

Compost toilets by their nature are much smaller scale than prevailing centralised sewerage treatment plants. The work of the aerobic microbes proceeds at a slow and energy efficient pace.

10. Use and Value Diversity

The microbes and other organisms which do the composting represent a very diverse ecosystem able to cope with the variety of season and material conditions. Because of the variety of situations in which compost toilets are built, diverse design solutions are appropriate.

11. Use Edges and Value the Marginal

We can think of compost toilets as an edge or interface between the built and natural environments, where durable structure and cleanliness meets the flux of decomposition and teaming life.

12. Creatively Use and Respond to Change

The ecological succession of microbes in a growing compost pile is remarkably resilient to fluctuations in added materials, moisture and temperature but problem free management of compost toilets does require that we buffer major fluctuations.



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The awareness and attention required to manage a compost toilet brings us full circle to the first principle Observe and Interact. Similarly the compost toilet is an important step in the cycle of mineral nutrients from our bodies to fertile soil just as the culinary arts are in bringing those same nutrients back to us. Maybe that explains why compost toilets are such common dinner table conversation in permaculture circles.

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