

# The becoming of Styroworm - food for thought on how to respond

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**ABSTRACT:** Artificial matter becoming food for organisms and organisms being able to biodegrade plastic is an exemplification of how the philosophical bases of our culture - the dualisms between nature and culture and consequently body and mind dichotomy - are being munched away. In this contribution the author uses *Styroworm* as a philosophical figure, an insect whose actions she analyses in terms of how they embody new materialist thoughts. In the second part the author continues exploring the implications of *Styroworm's* behaviour for humans through offering the worm as food. She proposes a different perspective on the human's position in this world as just a part of vital matter and discusses ethical implications of admitting the outside within. Concluding in a strategy for a sustainable future which is being response-able through becoming a bit more like and of *Styroworm*.

**KEYWORDS:** New materialism; Three ecologies; Mind-body-dichotomy; Hybrid; assemblage.

## INTRODUCTION

One of the most ubiquitous and long-lasting recent changes to the surface of our planet is the accumulation and fragmentation of plastics. Within just a few decades since mass production of plastic products commenced in the 1950s, plastic debris has accumulated in terrestrial environments, in the open ocean, on shorelines of even the most remote islands and in the deep sea. (Barnes et al., 2009)

In the last two years while the human population is acknowledging the environmental impact of plastic accumulation, more and more research publishes findings about insects, fungi and bacteria that feed off the plastic debris. I want to propose a few thoughts on what the discovery of such organisms means and how this embodies a transformation of ontological assumptions on which our culture is based. I will do so by the theoretical-poetic analysis of one insect that I call *Styroworm* and by introducing part of my artistic work with it.

## STYROWORM AS BEING

Polystyrene (PS) is generally considered to be durable and resistant to biodegradation. Mealworms (the larvae of *Tenebrio molitor* Linnaeus) from different sources chew and eat Styrofoam, a common PS product. The Styrofoam was efficiently degraded in the larval gut within a retention time of less than 24 h. (Yang et al., 2015)

In this condensed and descriptive tone the optical illusion of the boundary between science fiction and social reality (Haraway, 1991 : 149) was articulated and *Styroworm* elevated into public consciousness. On a virtual sheet of paper, on September 15th 2015, it says everything that needs to be said: Plastic into organism, organism out of plastic, cyborg, incarnation of the hybrid; artificial and natural fertilize each other, petroleum based plastic does not interrupt biological flourishing and *Styroworm* becomes in the enactment of possibilities for re-configurations of world matter (Dolphijn, van der Tuin, 2012 : 55), yet another embodiment of nonhuman agency. 47.7% of the ingested Styrofoam carbon is converted into CO<sub>2</sub> and the residue (ca. 49.2%) is egested as fecula with a limited fraction incorporated into biomass (ca. 0.5%) reads the study about *Biodegradation and Mineralization of Polystyrene by Plastic-Eating Mealworms*. PS is mineralized to CO<sub>2</sub> and incorporated into lipids. The Mealworm eats Polystyrene, its molecular formula  $[-CH(C_6H_5)CH_2-]_n$ , and Polystyrene offers itself (Serres, 1982 : 191) to be biodegraded and mineralized in the gut of the Mealworm, responding to its voracious appetite, inclining *Exi-who-bacter* to emerge as *Exiguobacterium* sp. strain YT2, an always folding, unfolding and refolding of processes we can not ascribe to anyone's intention (Deleuze, 1994 : 215). Polystyrene's and the Mealworm's ability to respond to one another is performed as *Styroworm*. Therein lies the

agency and inherent to it the ethics in response-ability.

Morals aside, *Styroworm*'s work is to eat.

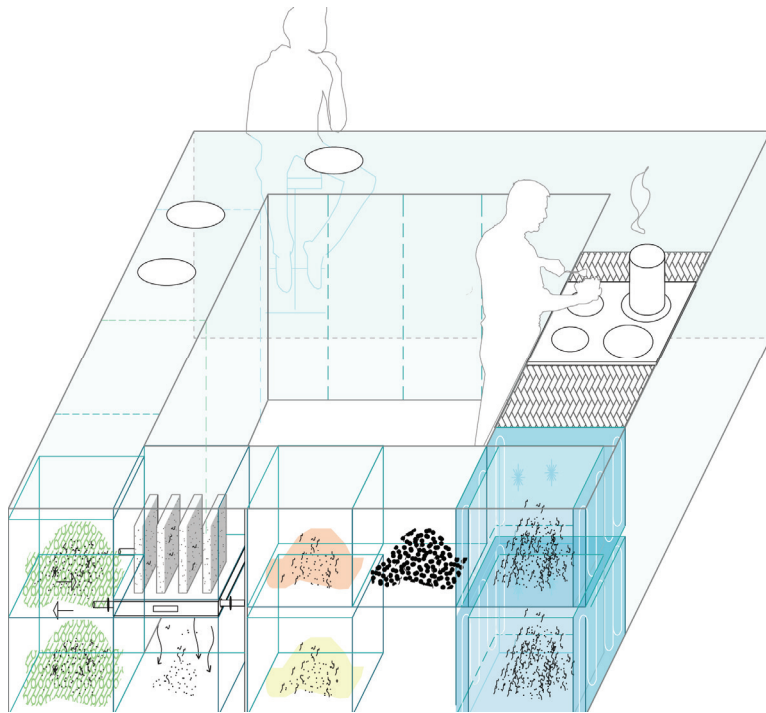
Designed to burrow with eyes poorly developed and therefore guided by its gut, she digs and dives into the foodstuff Polystyrene like an explorer and a miner at the same time, alienation from labour cannot be seen while munching, creating these underground levels of pathways, its home, home where the bug lays the eggs, there where the larvae gets stuck during Metamorphosis. While *Styroworm* is philosophizing - undermining dualisms - it is also a chef, an architect, creating a habitat to eat, like she found her *Knusperhäuschen*, and a plastic surgeon, performing surgery on plastic, endangering human's attempt at immortality for the production of culture is human's effort of accumulating energy in the face of entropy (Flusser, 1991).

*Styroworm*'s formed hybrid habitat of a Polystyrene-Carbonfecula-Sytrocrumbs- Chitin assemblage keeps him, who as food herself is at the same time an assemblage converter (Bennett, 2010 : 42), safer from its fortune. After all, *Styroworm*'s fate is to be eaten.

## STYROWORM AS FOOD

This is where I want to move on to the second part and show how in my artistic work the foodstuff aspect of *Styroworm* has come to take the major role. Influenced by Polystyrene hosting the Mealworm as his guest, and considering Serres' valuable analysis that we only eat at the expense of another, the host comes before the guest, so the eater owes the eaten, I consider that this reminder of moral obligation towards the foodstuff deserves to be magnified through artistic contribution for response-ability. The possibilities of visualizing and understanding ethics through an eater-eaten relationship become even more relevant when taking on the role of the mealworm while keeping the human perspective. This means the Mealworm is/was considered a pest to humans as it feeds on stored grains. Now it is not too far fetched to take on another organism's point of view - it doesn't even necessarily have to be another species but also an environmentally conscious other human being to make the same statement about the human in the face of the anthropocene. Even though I am going to carry on with another logic than the one presented in the introduction of *Styroworm*, it is solely for referencing between the 'turns'. Before *Styroworm*, the embodiment of agency as an enactment of possibilities and vital matter, there is an agency by individuals with a thinking mind that produce Polystyrene. This is a plastic whose global production has grown 200-fold from 1.5 million tons in 1950 to 299 million tons in 2013 (PlasticsEurope, 2015) which accumulates as waste in the environment and has become a reason for global concern as mentioned earlier on; qualifying its producer the human as the pest of the world. The mealworm responds to this material through absorbing it and the material to the mealworm through offering itself, likewise can the human. As the Mealworm is a popular food already in some cultures and considered promising and necessary future food in the west (van Huis





**IMAGE 1.** : Design for a mobile farm and snack bar for Styroworm food by Marta Dyachenko for Petja Ivanova



**IMAGE 2.** : by Anita Ackermann, Exhibition installation Last Days of Summer, cut-through of Styrofoam head inhabited by Mealworms since March 2016.

et al., 2013). *Styroworm* offers itself as foodstuff to the human during my exhibition 'Last Days of Summer' at TAMAGO Art Space in Berlin on image 2 and in image 3 you can see my ongoing collaboration with architect Marta Dyachenko for a mobile farm and snack bar of *Styroworm* foodstuff. Image 4 presents another work which positions *Styroworm* in an economic context through selling the Mealworm fed solely on Polystyrene, selling *Styroworm* as foodstuff. When Jane Bennett writes about moods and affective states being promoted by certain fats that have been eaten by humans, she states that "food will appear as actant inside and alongside intention-forming, morality-(dis)obeying, language using, reflexivity-wielding and culture making human beings" and argues that it is an emergent rather than mechanical causality that is at work therein (Bennett, 2010, 41). So we can speculate about moods and affects connected to the absorption of *Styroworm*, how the *Styroworm*-body-flesh-psyche assemblage is inclined non-linearly and talk about the ethics involved in admitting the outside (is) within. It means to step closer to expressing - through processing - an inclusion of the 3 ecologies as intertwined spheres in life and even more so that "material vitality is me, it predates me, it exceeds me, it postdates me" (Bennett, 2010, 120) which clearly is a proposition diverting the human from their centralized self understanding and positioning.



**IMAGE 3.** : exhibition Last Days of Summer, installation view, hybrid habitat objects from left to right. Object 1, inhabited by Mealworms (1 generation) since January 2017, Object 2 inhabited by mealworms (4 generations) since March 2016, Object 3 inhabited by Mealworms since January 2017, object 4 same as object 2

When being offered to be *Styroworm*'s guest we are suddenly confronted with the feeling of having to respond. We might feel reluctant as Polystyrene, the hazardous artificial material, exists as a thought still as an abject part of *Styroworm*, we know that the worm has eaten it and even though the insect food might be highly nutritious and healthy due to probiotic qualities of Chitin and the fats (which now store the carbon from a once polymerized styrene-monomer, made from mineral oil, generated over millenias of accrued plant material...) we might be rejecting it and not wanting to admit the outside within us. This only reaffirms our intuitional understanding that the environmental sphere affects the physical

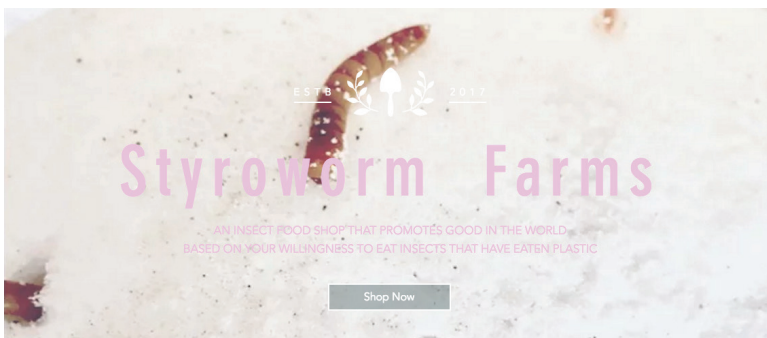
and looking at it through and on our plate, it challenges us. We are asked to transverse the boundary of our own processes of habits of disgust and habits of othering. We are asked to open our mouth and enable ourselves to respond, take part, communicate, become.

## CONCLUSION

What surrounds us is offering itself to be inside of us and therefore it matters to care for the outside as if you were caring for yourself, because as a matter of fact, you are. So it is not solely a metaphorical act for the human to eat *Styroworm* and through this embody the philosophy of vital matter but to actually let herself/himself be transformed and become a little more of and like *Styroworm*; one who renders obsolete the dualisms of our humanist heritage, mind and body, nature and culture with this creative act - that goes beyond criticizing - that transverses these idea(lism)s and purges univocity. Who would have expected to find a feminist in *Styroworm*?



**IMAGE 4.** : Wearable Styroworm farm, in collaboration with fashion designer Julia Bajanova



**IMAGE 5.** : Website Screenshot of my work as Online Shop that sells Mealworms fed solely with Styrofoam. All profit generated is donated to charity and art projects.

## REFERENCES

- BARNES, D. K. A.; GALGANI, F.; THOMPSON, R. C.; BARLAZ, M. Accumulation and fragmentation of plastic debris in global environments, *Phil. Trans. R. Soc. B*, 2009, 364, 1985-1998; DOI: 10.1098/rstb.2008.0205.
- BENNETT, J. *Vibrant matter: a political ecology of things*, Duke University Press, 2010
- DELEUZE, G. *Difference and Repeitition*, Columbia Universty Press, New York, 1994.
- DOLPHIJN, R. and van der Tuin, Iris. *New Materialism: Interviews & Cartographies. An imprint of MPublishing – University of Michigan Library*, Ann Arbor, 2012.
- FLUSSER, V. 30.5.1991, “Flusser Vorstellung Uni Bo 30.05.91”, Vilém Flusser Archive, Berlin (reference number: Ka008-Bochum\_01a). 12:10-14:06 Min.
- HARAWAY, D. *A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the Late Twentieth Century*, in *Simians, Cyborgs and Women: The Reinvention of Nature*, Routledge, New York, 1991.
- HUIS, A. V.; ITTERBEECK, J.V.; KLUNDER, H.; MERTENS, E.; HALLORAN, A.; MUIR, G.; VANTOMME, P. . *Edible insects: future prospects for food and feed security*, FAO Forestry Paper No. 171. 2013. FAO, Rome.
- PlasticsEurope. *Plastics, The Facts 2014/2015, An Analysis of European Latest Plastics Production, Demand and Waste Data*; PlasticsEurope: Brussels, Belgium, 2014.
- SERRES, M, *The Parasite*. The Johns Hopkins University Press, Baltimore, London, 1982.
- YANG, Y. YANG, J. WU, WM. ZHAO, J. SONG, Y. GAO, L. YANG, R. JIANG, L. 2015, *Biodegradation and Mineralization of Polystyrene by Plastic-Eating Mealworms: Part 1. Chemical and Physical Characterization and Isotopic Tests*. *Environmental science & technology*. 49. . 10.1021/acs.est.5b02661.