



Miszelle

## **Back to the basics, or: about conceptional approaches of living**

Martin Nave

What do we think of when we consider the essentials of living? We have to cope with many contending factors in life, such as other beings or our surroundings, so there is a need to develop strategies or concepts to approach and to adjust to these issues. This does not mean the biological definition of life, but rather the essentials for living.

Let's take the remarkable case of the sloth. Its entire life seems to be based on energy conservation - it eats, sleeps and lives up in the canopy. And whatever it does, it does it very slowly. The essentials for its living seem to be centered entirely around inhabiting the trees. But there is one significant life process that needs to be carried out, which strikes one as quiet odd considering nearly every other process takes place in the trees. Once a week it finally puts in the effort of climbing down the tree to defecate (which only holds true for the three-toed sloths and not for the two-toed sloths which defecates from the canopy).

It's important to understand that this descent takes a long time and therefore it seems to be a rather big investment. Being on the ground also means a huge risk, for instance falling prey to predators, such as jaguars. When it leaves the tree, the sloth is most vulnerable. So, why does it not just defecate from the canopy? Why should it take such a risk? Considering that the rest of its life processes seem to be based on simplicity and energy conservation, climbing down all the way seems quite contradictory. The sloths' leaf-diet offers very little nutrition and is supplemented by algae growing within the sloths' fur. The fur

<sup>1</sup> (<https://royalsociety.org/news/2014/sloths-moths-mutualisms/>),

itself is used as a habitat for certain moths. The females of the moths in turn need to lay their eggs in the fresh dung of the sloths, a fact that could perhaps be a logical explanation for the sloth transporting them to the “required site for ovoposition (egg deposition)”<sup>1</sup>. Experimental observations suggest that the amount of nutrition (and overall biomass) might be higher in the algae which grow on the three-toed sloth. This might be due to the moths living in the fur, which could in turn be due to the sloths’ descending behaviour. Theoretically this could result in a kind of self-sustaining “feed-back-loop”.

Notwithstanding the veracity of this hypothesis, what is clear at least is that the living process of the sloth might not be as simple as we might have imagined it to be. Behind these seemingly basic orchestrations there might be a number of mechanisms and other micro-environmental factors. It could be fascinating to break down and get to the essentials of living processes, because often this is necessary to understand relationships, dynamics and the world we live in, not only as a human. And sometimes this is only possible by deconstructing living processes and avoiding simplification of complex dynamics in living communities. But when we try to understand basic concepts, in this case the essentials of living, it is best to keep in mind that limited understanding of such processes would not get us far. Think of it like an autumn landscape with only the colours black and white and imagine missing out on the full range of colours, not being able to see the rust, the gold and the bright red of the autumn leaves. What works as a whole might not anymore, stripped from its contributing features. In the case of the extraordinary life of the sloth, it might not function without a certain environment that is bursting with life forms like the moth and the algae - and its relationship with these.

Somewhere in Costa Rica, life is upside down.

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