

Mapping Ecological Networks with the Living Organism - Slime Mould

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I had an idea that involved network mapping, that I wanted to test in an inner London location. I am an ecologist, and at the time I was working for a consultancy. But with no job code and no senior status in the company, I had no access to GIS mapping software. This was like denying a painter his paint brush, or an architect his pen! And it frustrated me.

So, what does one do in this situation? if you have got boiling water, I would say, use it to make a cup of tea. It seems a waste to let it cool.

The creation of *ideas* is always the result of an accumulation of external influences. We are all sponges: mimicking our friend's mannerisms, repeating social media fads, absorbing news and adapting our route home - unconsciously different on a sunny day or a wet-windy night. For me, a series of timely happenings: a work colleague (with a mycorrhizal love affair) inviting me to a film called 'The Creeping Garden', an architect-housemate with an interest in sustainability, combined with my mapping frustrations at work, sparked a spark (and why I am talking to you now). The idea: to employ the living organism, slime mould as an "ecological network decision support tool" as an alternative to using computer-based GIS software.

Slime mould is an organism that moves around looking for food. As it does this, it creates a pattern with itself, nodes (where the food is) and links (efficient arms) channelling the nutrients throughout the other parts of the slime mould body. In doing this, the slime mould forms a network with itself; an ecological response by an animal to its environment and means of survival.

There are hundreds of different species typically living in dark places, in woods in the UK and across the world. There is one species, which is more common, often found in school classrooms and science labs. It is bright yellow, a bit wet to touch and – as it turns out –, it smells a bit mouldy, I found. It has been doing its *thing*, for billions of years, and getting rather good at it. For that reason, scientists have proven its semi-intelligence, in that it is able to find its way out of mazes and is able to remember where it has been.

Search Google for 'slime mould' and you will find numerous articles, thousands of papers referencing it and even an enlightening TED talk ([What Humans Can Learn from Semi-Intelligent Slime Mould](#)) by a British artist Heather Barnett.

You can see where I am going with this, slime mould's inherent networking ability could help me model ecological networks. This would not be different from computer models; simplified

representations of reality based on numerous assumptions and all having their own limitations. The extra benefit of using or rather collaborating with slime mould, a fellow being would mean the mapping would become open-access, available to anyone. No technical expertise is required, neither are long days sitting behind a computer. This would be a bio-mimicry-style live-mapping engagement with one of Earth's oldest and most peculiar inhabitants, the slime mould.

I was hooked.

So that is where my adventures with slime mould began. I ordered a petri-dish of slime mould online (*Physarum polycephalum*), which took about two weeks to arrive. I bought organic oats and agar powder (vegetable thickener) from a nearby Chinese shop and set-aside a small cupboard – as home. I soon painted the cupboard black to make midnight escapades more striking to photograph and to seal it more effectively. I learnt the art of distilling water using household pots (thanks to YouTube) and was ready to transfer my yellow friend into fresh, sterile petri-dishes as soon as it arrived on my office desk.

As if the preparation was not weird enough, the mapping required a creative acceptance of the ridiculous. A colour map of the area of interest, overlaid with a layer of agar jelly (enough to cover and still see the map). Oats – a favourite food – were placed in positive places. For my experiments, these were green spaces and quiet roads. Salt, lemon or obstacles were placed on areas to avoid (e.g. busy roads). Then, I placed the prepared slime mould in a warm, dark environment and waited. As they move approximately 1cm an hour, they can be watched over the working day. Time-lapse photograph would have been a good investment but instead I took photographs three times a day, morning, evening and before going to bed. Slime mould was my new urban pet.

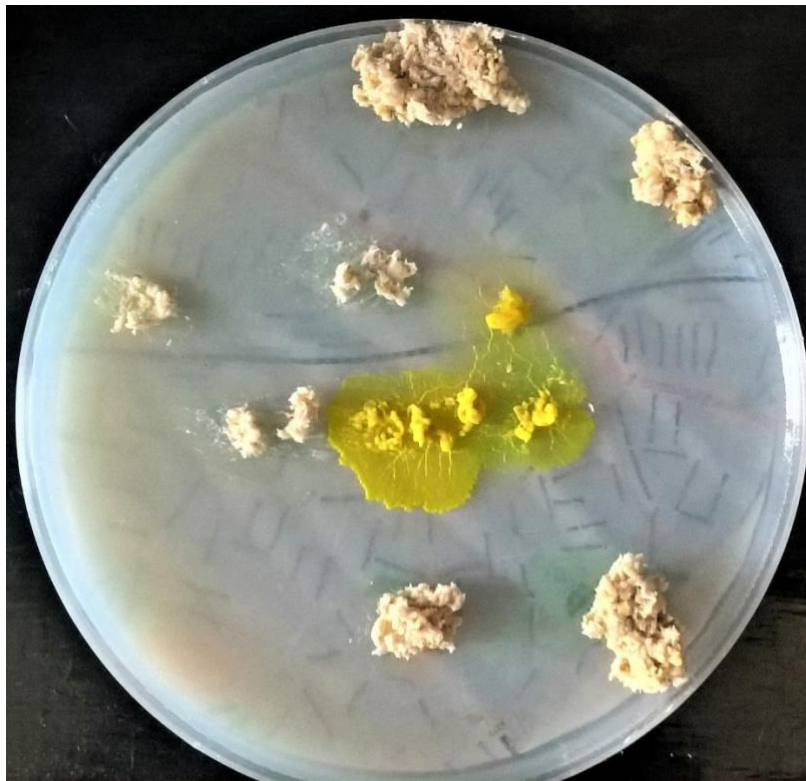


Figure 1: Picture taken from above showing the petri-dish with the map layer within agar jelly, oats (grey blobs) and slime mould (yellow). This was taken after a couple

of hours, where the slime mould was beginning to spread. Source: 2018 London Festival of Architecture Workshop. In collaboration with Rebecca Buckley.



Figure 2 shows the slime mould after a day or so: clearly preferring one side of the Norbury map to the other. Source: as figure 1.



Figure 3 shows a different mapping experiment. This time in the London Bridge area. This photo shows that sometimes collaboration does not always go the way you want. Source: 2017 lunch time CPD for LTS Architects, Bermondsey, London. In collaboration with Grant Walters, founder of Tranquil City App.



Medium-scale Mapping



Figure 4: On a different occasion, we got success: Slime mould finding three quieter, greener and healthier routes than Google’s main road route. Source: as figure 3.

In this way, slime mould assisted me in several mapping experiments. These included identifying links between existing green spaces in the London Bridge area, identifying tranquil routes to work and engaging the community with their green spaces in Croydon. Slime mould and I have collaborated on several occasions.

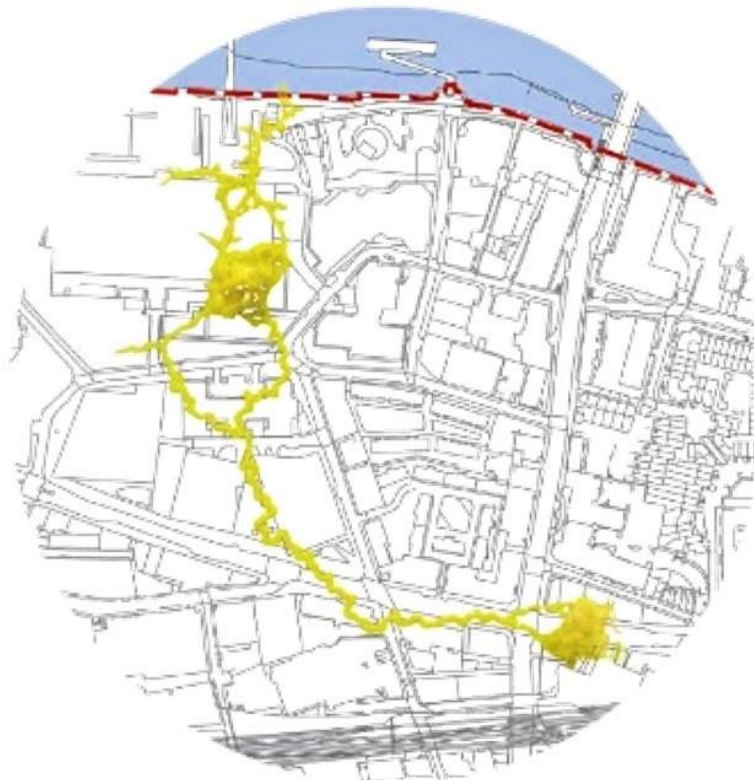


Figure 5: This image got everyone in Better Bankside excited for a little while. A future walking route identified by simple slime mould.

Everyone thought I was mad. That is ok. My new friend and I had a point to make. And we nearly got a job code as a result of our mapping success. I got to use my boiling water and many future collaborations with great people germinated as a result.

Future thoughts: it would be fascinating to see how slime mould might interpret a 3-dimensional map, created using 3D printing technology. The photographs alone would be psychedelic!

If you are interested in collaborating with slime mould, you can buy slime mould from www.blades.bio.co.uk

For more information visit [the Slime Mould Collective](#)