

Slime and goo

Description

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Nature and health are closely aligned, but not always positively in the case of buildings. Left unchecked, nature delivers invasive plant life with root systems that unseat brickwork, and break through water barriers. Fungus, mould, lichen and other spore-producing organisms (cryptogams) invade architectural cracks, pores and surfaces.

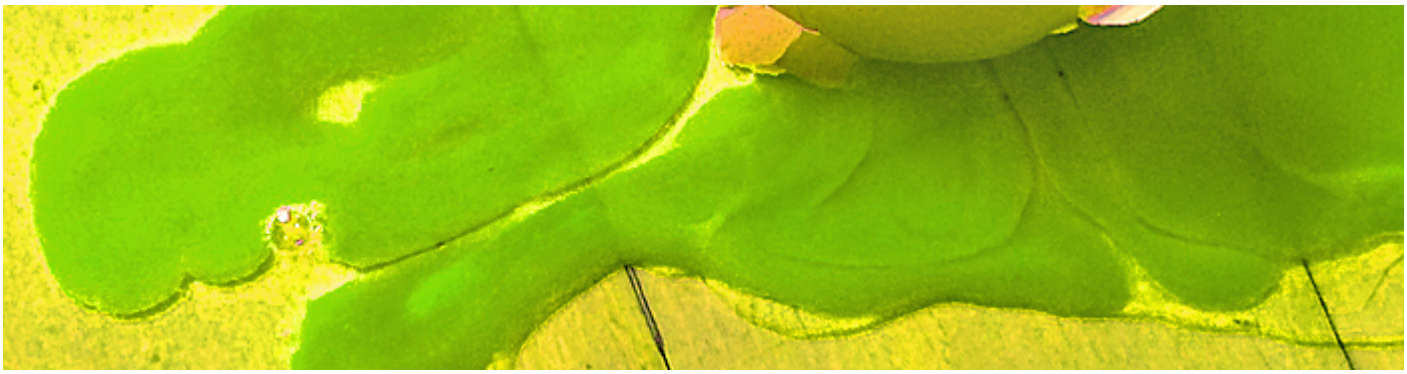
Invasive nature invokes a kind of â??disgustâ?• according to architectural scholars Marcos Cruz and Richard Beckett: â??Blotches, speckles and spots of cryptogamic growth evoke visual associations with epidermal disorders, similar to acne or skin sores and rashesâ?• (53), as do changes in the colour of buildings materials and â??excretions and protuberances of growthâ?• (53).

But Cruz and Beckett remind us that natureâ??s slow ravages also evoke a â??bucolic, idyllic vision of natureâ?• (53). The Romantic tradition in architecture valorises certain biological invasions: ivy clad walls, moss covered ruins, patinated stone, weathered and lichen-coated wood panelling.

Cruz and Beckett recommend a kind of designed and controlled biocolonisation of building materials. After all, such â??greenâ?• architecture captures air born pollutants, fixes atmospheric carbon dioxide and nitrogen, is low maintenance, and can even generate energy. Their practical research into the design of â??bioreceptiveâ?• materials and surfaces is aided by computer modelling and digital printing to foster a kind of â??biodigital materiality.â?•

They are working on intricate surface geometries and â??bioscaffoldsâ?• that encourage certain configurations of growth, and channel moisture to encourage cryptogamic growth. Cruz and Beckett think of tree bark as a fitting model of what they are trying achieve: â??Areas of shadow, areas of protection, crevices that trap dust and nutrients and water channels are all typological variables that occur on tree barks and provide very specific conditions at the material surface which allow for or restrict growthâ?• (62).

Itâ??s also the case that many of these innovations are outside of the usual appeal of large scale structures assuming elegant, flowing organic forms. A browse through images of biomaterial processes reveals algae-stained glass surfaces, fractured membranes, globules, stains and slime.



Buildings that heal

Cruz and Beckettâ??s approach to recruiting micro-organisms that colonise building surfaces is in the company of ideas about dynamic â??living skins.â?• Emma Flynn provides an account of experimental building technologies for mediating between internal and external environments. One such system involves walls clad in photobioreactors containing algae that capture carbon from the atmosphere, and combined with sunlight to collect heat, provide dynamic shading and produce biofuel.

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Other innovations include self-healing wall coatings made of synthetic photocells that form a crystalline microstructure like limestone when exposed to CO2, offering the possibility of â??healingâ?• stress fractures in buildings â?? a process analogous to the operations of organic â??scar tissueâ?• (26).

In an extensive review of organic, â??vibrantâ?• architecture, Rachel Armstrong describes a similar process in â??bioconcreteâ?•: â??The hardy organisms mixed into the cement are activated when tiny cracks in the concrete let in water and produce a calcified sealant that prevents further progression of the micro-fracturesâ?• (55). She also describes a â??membrane growth and repair processâ?• (178) where osmotic forces rupture the cell membranes â??that form around the copper II sulphate crystal and immediately heal as the salt solutions come into contact with each otherâ?• (179).

I give this account here as Iâ??m canvassing the various ways that nature comes together with the digital in architecture and landscape architecture. In this case thereâ??s a connection both with concepts of decay and healing. Also see What is nature for?

Reference

- Armstrong, David. 2010. *A Strategy for Collaborative Ageing Research in the UK*. A strategy for collaborative ageing research in the UK: Medical Research Council
- Cruz, Marcos, and Richard Beckett. 2016. Bioreceptive design: A novel approach to bio-digital materiality. *Arq (Architectural Research Quarterley)*, (20) 1, 51-64.
- Flynn, Emma. 2016. (Experimenting with) living architecture: A practice perspective. *Arq (Architectural Research Quarterley)*, (20) 1, 21-28.

Notes

- Cruz and Beckettâ??s lab is described with illustrations at the BiotA website.
- The image (filtered) above is of a broken egg. Below is an inlet on the Thames, North Greenwich.



Category

1. Nature

Tags

1. architecture
2. healing
3. health
4. material
5. skin

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