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Factories of the Future – Synthetic Biology: A Sustainable Technology for Future Textile Manufacturing?

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It is predicted that by 2050, we will reach a global population of 9.6 billion people, a growing population who will need to clothe and feed themselves (United Nations, 2013). Today, key resources such as oil, one of the key raw materials of the textile industry is running out, fresh water resources are stretched and agriculture is beginning to suffer the effects of climate change (Ackerman and Stanton, 2013). It is estimated that the current global population is using 50% more planetary resources than is available. We are exploiting natural resources faster than they can regenerate (Moore and Rees, 2013; 42). Fashion is currently the second largest polluting industry on the planet, after oil (Deloitte, Danish Fashion Institute, 2013). The textile industry discharges billions of tonnes of waste and toxic chemicals from its production and manufacturing processes every year. There is a desperate need for the fashion and textile industry to reduce its ecological impact whilst meeting the demands of a growing population on a finite planet. How can we really move forward and explore new perspectives of sustainable technologically led manufacture?

Biologists working in field of synthetic biology are developing methods for 'reprogramming' bacteria to produce bespoke materials, medicines and biofuels. "Our future factories could be genetically engineered living cells, designed to custom-make materials to suit our needs" (Collet, 2015). What is the potential of this 'living technology' as a new way of crafting and producing textiles in the future? Could it become a disruptive technology that will support a paradigm shift to a more sustainable model of manufacture? Carole Collet believes that "If it stays on its current trajectory, synthetic biology could have the same impact on our society that the Internet has had on our everyday experience in the past decade (Collet, 2015)." The question is does it really have this potential? And if so how will it impact on the fashion and textile industry?

BIOmatters is a speculative design-led project exploring whether synthetic biology can become a sustainable technology for future textile manufacturing. The project comprises of a series of design probes, photographic fictions and videos that explore speculative future scenarios, products and companies. BIOmatters investigates the intersection of textile design and synthetic biology to propose future fabrication processes for textiles, exploring what this landscape might look like in industry and what the changing role of the textile designer might be.

The project also aims to highlight current issues of the fashion and textile industry and key sustainable challenges of the 21st century by,

- Making the already existing link between textiles and living systems more visible for people.
- Helping people to think about materials as living dynamic systems.
- Instigating questioning around the way textiles are produced in the present through the proposal of speculative future manufacturing and emerging technology.
- Fostering discussion around wider issues that surround the industry socially, politically and environmentally.

The purpose of this paper is to present the outcomes of BIOmatters and reflect on the potential of speculative design practice to question through making whether the manipulation of bacteria could become a new way of crafting and producing textiles in 2050+?