Summary

The research reported in this thesis explores the possibility of reducing clothing volumes by design. Clothing volumes have increased dramatically in the last decades, with some estimations indicating that the number of garments sold worldwide doubled between 2000 and 2015. The environmental challenges associated with this process have motivated sustainable fashion scholars and practitioners to propose a series of strategies to reduce the number of garments in circulation. The six studies compiled in this thesis examine these strategies – and the ability of design to enable a reduction in clothing production volumes – critically. They build on research approaches stemming from the humanities, the exact sciences, and research-through-design to identify, assess, and elaborate on these strategies.

Next to clothing volumes, two other topics are central for this thesis, namely, product personalisation and the wardrobe. Literature in design for sustainability highlights the value of clothing personalisation for extending the useful lifetime of garments, which should lead to reductions in new product demand. Moreover, emerging manufacture models for product personalisation are promoted as drivers for a more environmentally-friendly apparel sector. The results of the research, however, question their impact in historical and empirical terms. Differences between the expected and observed effects of personalisation are partly explained by previous assumptions about clothing consumption in the field. Therefore, the studies proceed in offering an alternative perspective on clothing consumption building on the systemic nature of the wardrobe.

Overall, the studies highlight:

• the value of clothing volumes as a framework to discuss the environmental burden of the sector and the suitable actions to tackle it, pointing out to the limitations of other concepts that are used to this end (e.g. impact per garment, added value, promoting alternatives, and durability).

• the lack of empirical research on the effects of design actions to reduce volumes, showing that they may not lead to the expected results, and proposing methods to advance knowledge in this direction.

• the implications of technological shifts in clothing production and consumption hindering or enabling product personalisation, exposing how partial historical visions are used to support the environmental value of technological innovation.

• opportunities for the field of fashion studies to diversify its theoretical framework, promoting a variety of perspectives that help discussing the challenges of the sector in terms of sustainability.

• the value of systemic perspectives on the wardrobe to understand clothing consumption in line with its complexity.

• opportunities for sustainable design research to develop a stronger independence from practice, contributing with critical reflection on design actions and consequently driving their progress further.