

2026 REMADE Conference Abstract

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Developing a Circular Textile Ecosystem through Multidisciplinary Collaboration and Partnership Building

This paper presents a set of findings from a two-year collaboration (2023-24) funded by the National Science Foundation Convergence Accelerator program to build a circular economy for textiles in the Delaware Valley region. The primary goal of the ReSpool project was to create the technologies, processes, and partnerships needed to facilitate textile-to-textile recycling on a regional scale. As many scholars have noted, the development of circular economies requires a multidisciplinary and collaborative approach that involves stakeholders with various forms of expertise and from a range of economic sectors. Less scholarly attention has been paid, however, to the particular challenges that such diverse teams may face when attempting to coordinate across differing backgrounds, training, priorities, and objectives. Rather than describing the technical outcomes of the ReSpool project, then, this paper focuses attention on the multidisciplinary team dynamics in a context in which social scientists, engineers, designers, and textile scientists were working together on project development and implementation. Drawing on the transcripts of more than 40 team meetings over the two-year period, the paper uses social science methods of participant observation and discourse analysis to analyze how team members interacted with each other. Several key challenges arose among the multidisciplinary team, including challenges related to the development of a working definition of textile sustainability, conflicting understandings of circularity, and competing ideas regarding the appropriate scale for a circular textile ecosystem. At times, these challenges impeded the team's progress. At other times, these challenges generated useful discussion and debate that led to new understandings of how sustainability and circularity might be achieved in the textile sector. The insights and perspectives gained through analysis of this project can usefully inform the work of other multidisciplinary teams attempting to build circular economies for textiles and other products. This paper also considers the importance of partnership building across academia, industry, and government for the success of such collaborative efforts.