Algorithmic Pollution: Understanding and Responding to Negative Consequences of Algorithmic Decision-making

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Abstract. In this paper we explore the unintended negative social consequences of algorithmic decision-making, which we define as "algorithmic pollution". By drawing parallels with environmental pollution, we demonstrate that algorithmic pollution is already here and causing many damaging, unrecognised and yet-to-be understood consequences for individuals, communities and a wider society. Focusing on transformative services (i.e., services that transform human lives, such as social support services, healthcare, and education), we offer an innovative way of framing, exploring and theorizing algorithmic pollution in the contemporary digital environment. Using sociomateriality as a theoretical lens, we explain how this type of pollution is performed, how it is spreading and who is responsible for it. The proposed approach enables us to articulate a preliminary set of IS research challenges of particular importance to the IS community related to living with and responding to algorithmic pollution, together with an urgent call for action. Our main practical contribution comes from the parallels we draw between the environmental protection movement and the newly created sociomaterial environment that needs protecting from the spread of algorithmic pollution.

Keywords: Algorithmic Pollution, Sociomaterial Environment, Negative Consequences, Algorithmic Justice.