Engineering as Tinkering Care: A Rainwater Harvesting Infrastructure in Cochabamba, Bolivia

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Abstract

In this article, we show how a rainwater harvesting system is made to work. Located at a school in the rural outskirts of Cochabamba, Bolivia, the performance of the system depends on ongoing forms of sociotechnical tinkering: it works well because of the continuous fine-tuning, adaptations, negotiations, and adjustments that people engage in. Acknowledging this hinges on accepting that infrastructures are more fragile, emergent, and contingent than is normally allowed for in engineering textbooks. The language people mobilize to explain their acts of tinkering is also different from how engineers express what they do: they talk about care and caring – care for each other, for their children, for plants – and emphasize reciprocal responsibilities and collective concerns. For them, making water flow is not just about meeting goals of productivity and efficiency, but also about restoring and sustaining the infrastructure itself as well as the relations it supports and makes possible. It is a way of talking that expresses concerns of sustainability and justice. Our conclusion from studying this rainwater harvesting system is that there is merit in expanding and complementing prevailing notions of engineering as optimizing forms of control, with theorizations of engineering as forms of tinkering care.

Keywords: Rainwater harvesting, engineering, water infrastructure, care, Cochabamba