

THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

# Making Sense of Sensing: Learning through Maker-based Civic Engagement

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## ABSTRACT:

In the last decade or two, initiatives engaging the public in scientific activities have become increasingly popular. For example, in air pollution monitoring with Do-it-Yourself (DIY) low-cost sensors. It is a relatively new practice that emerged due to the falling costs of sensor technology and components, combined with enhanced access to communities for sharing information and support. The engagement in DIY monitoring is here described as a maker-based civic engagement where collective action towards civic goals is reached through a peer-based, interactive, and social practice adopted from the culture of the maker movement.

Through a multi-sited ethnography this dissertation contributes with two perspectives on DIY monitoring; how an institutionally organized initiative perceives outcomes of public engagement and how a grassroots civic mobilization initiative acts and learns while DIY monitoring. The sites cover two approaches to involve people: top-down as an institutionally organised public engagement and bottom-up as a grassroots-driven civic engagement. To unpack the creation and sharing of meaning in this empirical setting, I draw on research on productive and exploratory dialogue, combined with research on online communities where people collectively engage in meaningful participation.

The institutionally organized initiative plans for public participation and wants to influence people. However, they prioritize getting sensors up and running since not knowing how to address issues of empowerment. The members of the grassroots initiative do not engage in building common community knowledge around issues of air pollution the way the institutionally organised project wants. Instead, their civic and collective actions are intended to generate hyperlocal, open, real-time air pollution data and ensure that data will continue to be delivered. The maker-based civic engagement seen in this dissertation enables a specific form of interest-driven learning. The maker-based social media setting allows meaningful participation where members make sense of sensing through exploratory dialogues and scaffolding common community knowledge. This dissertation suggests that establishing social relationships through non-productive and purely social conversations may be of substantial value for the meaning that participants ascribe to participation in a community.

## KEYWORDS:

interest-driven learning, civic engagement, public engagement, exploratory dialogue, meaningful participation

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