The Design of Large Technological Systems: The cases of Transmilenio in Bogotá and Metro in Copenhagen

This is a study of the processes of design of large technological systems based on a two-case study: the rapid transit bus system, Transmilenio, in Bogotá, Colombia, and the urban rail system, Metro, in Copenhagen, Denmark. The research focused especially on the process by which designers define material scripts during the conception, construction, implementation and operation of large technological systems. The main argument is that designers define scripts in a process in which three parallel developments are at play: first, a reading takes place of the history (past, present, future) of the arena of development where the system will be constructed. Second, designers define scripts through the delegation of agency, causes and responsibilities to humans and non-humans, a process in which the limits of the system are also defined and enacted. Third, the process of the definition of scripts implies a reconfiguration of the designing team, the supporting actors and the diverse user groups. By tracing material scripts, the author accounts for the unfolding of visions, politics and materialities that constitute the system. The analysis contributes to understanding the complex sociotechnical dynamics involved in the design processes of large technological systems by revealing how their constitution produces a reconfiguration of the arena of development of urban transport. This dynamic substantiates the co-evolution of technological systems and the city.

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