

# Model

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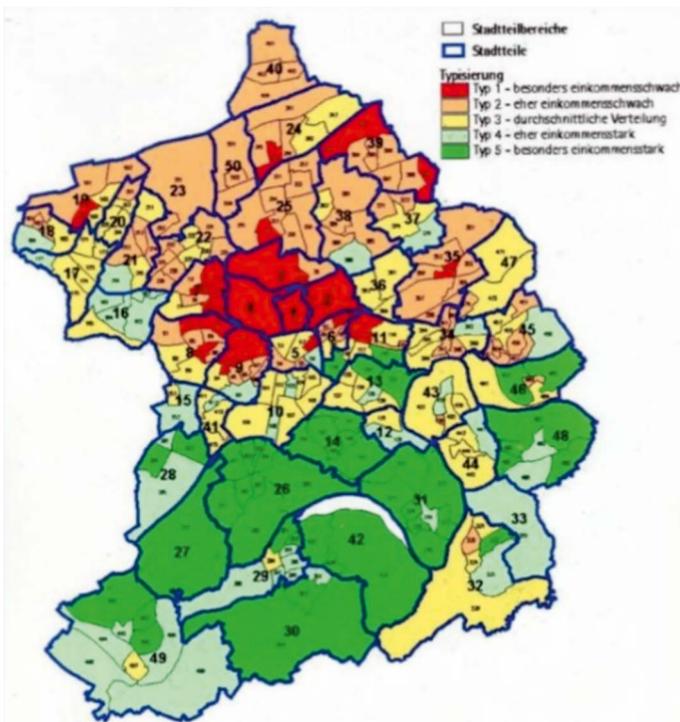
## 1. Definition

A model in the broadest sense of the term is an example worthy of imitation and emulation. More specifically, it is a structural design or blueprint that can be adapted to a variety of purposes. In planning history and theory, a model is also a systematic collocation of data, layered information and inferences which is used to describe and assess a spatial setting and its developmental dynamics.

## 2. Example

A map of a city with colour-coding in green, yellow or red to represent high, medium or low average incomes per district (see fig. 7) is a model of that city in that it (1) represents the city, (2) does so in highly selective, simplified, abstracted and aggregate form, and (3) does so for specific purposes – possibly to support decisions about where to develop technology parks, plan new housing or community gardening projects or launch social cohesion programmes – while it would be largely useless for other purposes. A model such as an income map offers three services to its readers: (a) it reduces and codes reality, (b) it translates complex settings into readable and reproducible spatial representations, and (c) it has narrativity, suggesting particular storylines, while discouraging others. Most prominently here, the color-coding suggests a story of an affluent green south and an inner city in economic crisis mode.

Fig. 7: A map of the city of Essen showing average incomes per district.



Source: Stadt Essen

### 3. Explanation

Models offer a simplified physical, digital or mental representation of a more complex outside entity to which they must be functionally or structurally similar in order to successfully serve as a model. Models are devised or chosen for a specific purpose and – depending on that purpose – will selectively focus on different characteristics, elements, connections of the system perceived as central to the specific purpose while ignoring or leaving out others. All models, according to a general theory of models<sup>36</sup>, in addition to the three characteristics of being (1) representational, (2) reductive and (3) pragmatic, are

characterized by the dual nature of simultaneously being models “of something” and models “for something”, since they both reflect and at the same time anticipate what they mean to depict, render understandable and prepare for intervention.<sup>37</sup> Models are *descriptive* renderings of an entity of which they are a model and they are – at least implicitly – *prescriptive* blueprints for the design or transformation of a future entity for which they are a model. In this respect models resemble narratives: they do not only reflect back upon an existing reality, but actively shape the way the world is perceived and how we see possibilities for change and development.

In urban modelling, the key methodological challenge has been the successful combination of quantitative and qualitative models and the effort to complement the strengths of each to minimize the respective limitations of either type of model. Douglass B. Lee famously listed the seven “sins” of models in his “Requiem for Large-scale Urban Models” (1973), a trenchant critique of the adaptation of quantitative computational models that had originally been devised for space and military operations to urban planning problems. Models can be too comprehensive, too gross, data consuming, structurally inert, complex, mechanical and expensive, according to Lee.<sup>38</sup> Quantitative models – designed as decision support tools, for instance – are characterized by quantification, abstraction from individuality and specificity and by aggregation and thus are frequently not concerned with local or individual characteristics. Qualitative models are frequently designed to do just that: to represent local or individual specificity. Literary texts can be seen as a particular type of qualitative model in that they focus precisely on the representation of specific places, of individual responses and patterns of sense-making. In their selection of which elements of complex urban reality to incorporate and what to leave out and in their inventive license, literary texts are virtually diametrically opposed to quantitative models seeking data driven abstraction, scaling and applicability to a wide range of settings. But these distinctive types of models shape each other in multiple ways, since empirical data and preconceived principles shape qualitative as well as quantitative analyses and scenario building.

Literary texts as qualitative forms of 'modelling' urban complexity enable views of planning problems that acknowledge the possibility of disruption and invention as much as the possibility of backsliding and inversion. Additionally, they can serve as exemplary models that inspire emulation, thus allowing for slow transformations of the reality depicted in the model.

#### 4. Applications

Qualitative models established in literary texts capture place-specificity, uniqueness and individuality and it is little surprising that they are frequently employed in narrative mapping exercises that accompany concrete urban planning activities. These qualitative models occasionally contradict quantitative models that abstract from the individual, and the specific to arrive at more generally valid conclusions or predictions. As increasingly frequent collaboration between planning experts and science fiction writers shows, literary texts as models of and models for urban realities also have a crucial role to play in developing scenarios. Thus, the German Federal Institute for Building, Urban and Spatial Research (BBSR) recently issued a study entitled *Learning from Science Fiction Cities* that discussed potential uses to be made of the extent to which literature, but also film and video games, contain modelling elements that address questions of urban governance, infrastructure and the built environment.<sup>39</sup> Planning for uncertainty initiatives have increasingly adopted "what if" scenario building and gaming in order to learn from models of urban development developed in literature and popular culture.

**Related entries:** Narrative, Scenario, Scripts, Travelling Models

## Further Reading

Gurr, Jens Martin. *Charting Literary Urban Studies: Texts as Models of and for the City*. New York, London: Routledge, 2021.

te Brömmelstroet, Marco, Peter Pelzer, Stan Geertman. "Forty Years after Lee's Requiem: Are We Beyond the Seven Sins?" *Environment and Planning B, Planning & Design* 41, no. 3 (2014): 381–387.

Batty, Michael. "Chapter 9: Urban Simulation." *The New Science of Cities*. Boston: MIT Press, 2013. 271–299.

