



## Slum as System

An empirical examination of the sociological phenomenon of slum settlements  
in Indian megacities on the conceptual basis of the Systems Theory

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## **TABLE OF CONTENTS**

### INTRODUCTION

I. A picture of slum . . . . .	04
II. What is slum? . . . . .	05

### THEORY

III. Systems Theory basics . . . . .	07
IV. Structural and operational couplings . . . . .	08
V. Form . . . . .	09
VI. Inclusion/exclusion - a form . . . . .	10
VII. Slum as risk . . . . .	12
VIII. Slum as policy-outcome . . . . .	13
IX. Slum as data . . . . .	13
X. Slum as economic factor . . . . .	14
XI. Slum as informality . . . . .	14
XII. Slum as space . . . . .	15
XIII. Slum as imagination . . . . .	15

### METHODS

XIV. Research approach . . . . .	17
XV. Diagramming methodology . . . . .	18
XVI. Reflection of research . . . . .	21

### APPLICATION

XVII. The Pune slum mapping system . . . . .	22
XVIII. The Delhi informal transport system . . . . .	27
XIX. The Mumbai slum tourism system . . . . .	32

### CONCLUSION

XX. Results . . . . .	36
XXI. Discussion . . . . .	37

ACKNOWLEDGMENTS . . . . .	39
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BIBLIOGRAPHY . . . . .	40
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## **INTRODUCTION**

### **I. A picture of slum**

When we hear slum, a unique picture comes into our mind. Some of us may see dilapidated shacks, haphazardly arranged in a narrow street – congested by masses of humans and animals. Others may visualize slum as a big community of poor but happy people. Slum could also be seen as humanitarian catastrophe compromised of open sewers, rampant crime and general lack of perspective. While some may think of it as voting pools, which can be skimmed off every few years, others may rather think of slum as a sandbox environment for urban planning strategies. Some again may see it as an unbridled form of archetypical capitalism, carried out in comb-like structures by efficient drones, producing for the world market. In some instances, slums even may not be seen at all, because they often do not appear on maps. However, slum is not only chaos, kitsch, catastrophe, self-realization, ballot paper, white space or positive return on investment. It is also home for about 1 billion people.

This work aims at being a systematic sociological reflection on the major socio-spatial phenomenon of slum – something which directly affects the lives of roughly one seventh of the current world's population. Here, the objective is not the accurate modeling of every social intricacy of slum. Considering the scope of such a task, such an endeavor would be necessarily futile. What can be done though, is to process some selective pieces of information – observations from the author of this work and from others. The heuristics used for this qualitative way of data interpretation is the Systems Theory in the tradition of the German sociologist Niklas Luhmann. In essence, that approach equates to the observation of observers, while constantly being aware of their blind spots. Guided by the theory's terms like *system*, *structural coupling* and *autopoiesis*, the author hopes to give an explorative and novel overview of the phenomenon of slum from a sociological, communication-based perspective. Practically, this is done by applying the Systems Theory on various forms of empirical material including interviews, research papers, maps, newspaper articles, and other written sources.

The main body of this thesis is divided into three thematic segments. The first segment forms the theoretical foundation, where an introduction into the topic of slum in the form of definitions and typological data is given. Also, some key elements of the Systems Theory are briefly featured to facilitate understanding for readers not yet privy to the theory's qualities. Particular emphasis is on the term of form, which is a differentiation mechanism for communication. The explanatory power of this key concept is delineated on several short examples of slum communication observations. The second segment describes the use of methods for data collection and evaluation, which are reflected regarding their potential for error. Among other things, this includes the analysis of present sociological diagrammatic methods usable in the framework of the Systems Theory as well as attempts for a further development of these. The third segment comprises the empirical part of the thesis. This part consists of a textual and diagrammatic analysis of three slum-related phenomena, covering slum tourism in the megacity Mumbai, informal transport systems in India's capital Delhi and slum mapping in the large city of Pune. The geographical focus on Western and North-Central India reflects the author's personal research interest in these regions.

The thesis concludes with a comprehensible presentation of results. These are, due to the research setup oriented on individual cases, only limitedly generalizable. In this sense, the scientific contribution of this work can be seen mainly in the reflective application of a social theory, which has as yet been only little used in the thematic context of slum. Additionally, this work also

broaches the issue of methodic difficulties in the application of the Systems Theory on qualitative empiric phenomena. Finally, the author also attempts to make some statements on future application possibilities of the Systems Theory for the interpretation of complex spatial communication processes.

A supplementary function of this thesis can be seen in its conscious arrangement of vivid and at the same time important sociological topics, observed and processed from a Central European viewpoint. The author hopes, that the communicative form of the present thesis helps in spreading the discourse on slum, which is at the moment very pronounced in South- and East Asian countries, also to other geographic regions or academic traditions. At best, this work may even serve as a thematic entry point for some readers and may contribute to forming their own respective picture of slum.

## II. What is slum?

At this point, an overview of the phenomenon of slum and its currently used definitions is given. For this purpose, the *detection form* used by supranational organizations such as the United Nations, as well as state bodies, seems most suitable. With the differentiation slum/not-slum, a delimitation is constructed. This approach allows to assign the phenomenon to one of the two sides and to determine the frequency of occurrence. The differentiation works with a set of rules, which vary between observers. UN Habitat (United Nations Human Settlements Program) notes, that informal settlements are residential areas with (1) insecure tenure, (2) lack of basic infra-structure and (3) illegal and/or inadequate housing. Slum is an even more disadvantaged type of settlement and is defined as follows:

“Slums are the most deprived and excluded form of informal settlements characterized by poverty and large agglomerations of dilapidated housing often located in the most hazardous urban land. In addition to tenure insecurity, slum dwellers lack formal supply of basic infrastructure and services, public space and green areas, and are constantly exposed to eviction, disease and violence.” (UN Habitat 2015: 1)

In 2014 more than 54% of the world’s population lived in urban areas – this are about 4.1 billion people. At the moment, around one quarter of the world’s urban population lives in slums. Even though the proportion of the world’s urban population living in slums decreased considerably in the last decade, the absolute number of slum dwellers is rising. Furthermore, in the next 20 years, the urban population of South Asia and Sub-Sahara Africa is expected to double. Eventually this will lead to a dramatic growth of slum settlements in these regions. In 2050, Africa’s urban dwellers are predicted to increase from 400 million to 1.2 billion – an increase of 800 million people, which is nearly the amount of all current slum dwellers (cf. UN Habitat 2015: 3p). According to UN Habitat, slums are caused by several interrelated factors: population growth, rural-urban migration, lack of affordable housing, weak governance, land speculation, economic vulnerability, discrimination, and displacement caused by conflicts or natural disasters. Slums are “... spatially disengaged from broader urban systems and remain excluded from mainstream urban opportunities” (UN Habitat 2015: 5). UN Habitat draws attention to the fact, that slums are a global phenomenon and that they exist in urban contexts all over the world. They are known by a range of names, among others *favelas*, *poblaciones*, *shacks*, *barrios bajos* or *bidonvilles*, appear in very different typologies, forms or dimensions, and occupy various urban places (cf. UN Habitat 2015: 2).

According to the Indian policy researcher and editor Prabodh Dhar Chakrabarti, the occurrence and typologies of slums in India are far off from being uniform. Where slums in Kolkata

or Mumbai developed historically near large factories or mills during the colonial period, Delhi has no particularly large slum settlements in certain areas. Quite the contrary – they are located along railway tracks and roads; at river banks, parks, public places and other vacant land, scattered all over the city. Since the majority of Delhi slum clusters has less than 500 households, infrastructure improvements are less cost effective than in cities with more concentrated slum settlements (cf. Chakrabarti 2001: 5). The UK-based architect Ayona Datta deals intensively with space and law in the context of Delhi squatter settlements. On the basis of an economic survey, carried out by the Delhi planning department in 2001, she differs between five groups of Delhi settlements, which are often subsumed under the notion of slum. Totalled up, they house about 65% of the cities' population at the time of the survey. However, the everyday experiences of inhabitants of different settlement types vary significantly. First, this is caused by different regulations, which the settlements are subject to. Second, the surveyed settlements denoted as slums also exhibit significant differences in housing quality and access to infrastructure.

Following Datta, the first group is comprised of squatter settlements called *jhuggi jhopri clusters* or *JJ clusters*, which are built on land occupied outside of formal processes. These settlements are both illegal and *informal* (a term which is often used synonymously with “not planned”). Consequently, they have a very poor quality of housing and are not connected to public services. The second group, the *Slum designated areas*, consists of settlements with a statutory status under the 1956 Slum Act. This legal recognition makes them eligible for formal intervention by the state in terms of infrastructure and housing – in contrast to JJ clusters, which are not eligible for these services. The quality of housing in Slum designated areas is diverse and ranges from agglomerations of informal shacks similar to JJ clusters up to historic neighborhoods only lacking some services. The third group, the *unauthorized colonies*, is the most heterogeneous one. This group refers mainly to settlements, which are built in violation of the master plan. Therefore, it includes both elite gated communities built on unlawfully acquired land (illegal and formal) and impoverished settlements similar to JJ clusters (illegal and informal). The fourth group, the *regu-*

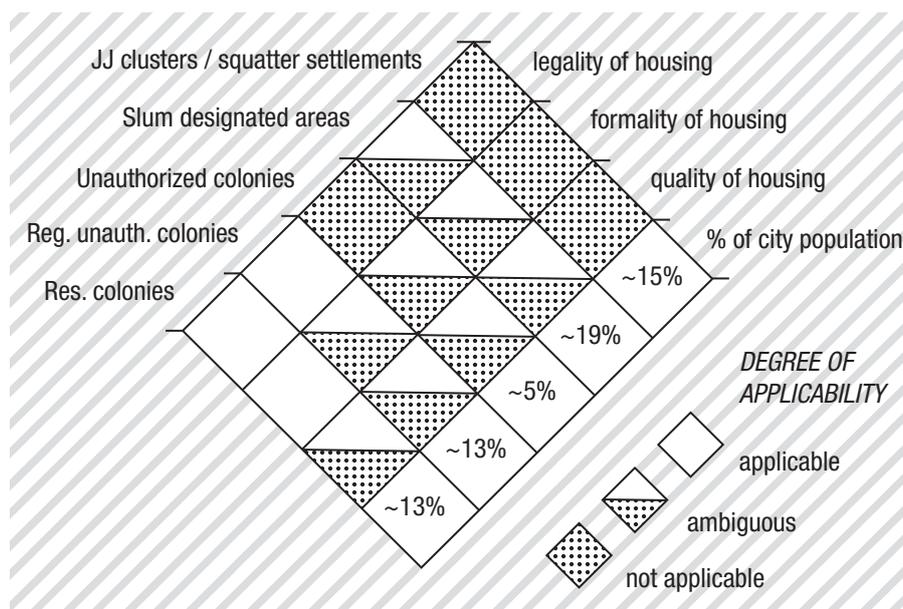


Diagram 01: Typology of Delhi slum settlements

*larized-unauthorized colonies*, is comprised of former illegal settlements which have been given legal tenure retrospectively. The fifth group, the *resettlement colonies*, consists of legal and formal settlements, which are inhabited by former dwellers of JJ clusters. However, some of these relo-

cation settlements are also characterized by a lack of housing quality and access to infrastructure, which renders them by some definitions as slum (cf. Datta 2012: 5p).

These different terms and their respective definitions are presented as an example of notional entanglements of slum along legal, formal, spatial and other differentiating lines. What stands out at first glance, is not only the large scope of the phenomenon, but also its considerably high complexity. Though slums received more and more attention in the research community over the last 30 years, in the view of the author, the current amount of sociological research on this topic is nowhere near reflecting its importance. This is especially true regarding multidisciplinary approaches centered on the basic questions of how rapid urbanism, high population density and heterogeneous societal structures can be aligned with the promise of a better life for all. While the political system, economic system and technical system will arguably be accountable for the biggest improvements of living conditions for the 2 billion slum dwellers in 2050, also the science system should make its contribution.

Following this line of thought, this work addresses some key issues of the present slum system from a socio-spatial, communication-centered point of view. Here, the Systems Theory in the tradition of the German sociologist Niklas Luhmann (1927-1998) functions as theoretic framework. This is due to the theory's qualities regarding the analysis of complex, interrelated ("coupled") social structures, which are understood as conceptual constructions of observers. The empiric application of the theory is intended to be bi-directional, which means that both the phenomena are analyzed on the basis of theory, and the theory is analyzed on the basis of phenomena. In the following chapter, the theory's fundamentals are briefly summarized, paying particular attention to the promising term of form as versatile and observable differentiator of communication.

## **THEORY**

### **III. Systems Theory basics**

Communication is generated by other communication and is carried out by and between social systems. It consists of the three elements *information*, *message* and *comprehension*. However, in Luhmann's Systems Theory no *flow* of information exists. He notes, that communication cannot be understood as a transfer process (cf. Luhmann 2002: 194). This is due to society being an *operationally closed* system – observations of the system's environment can only be performed with its own differentiations. In other words, this means that processes native to a system (e.g. observations) cannot reach out to its surroundings. The comprehension of communication is based on the recipient's set of differentiations, which inevitably alters the initial information (cf. Luhmann 2002: 92). Every rule has its exemption though, in this case the mechanism of *structural coupling* (and also: *operational coupling*), which will be addressed more detailed below.

In the Systems Theory, the two-sided form of *system* and *environment* is conceptually used. In this form (which exemplifies the general characteristics of any two-sided form), it becomes clear that system and environment are separated, but cannot exist without the other side. The Systems Theory uses this specific form for its observations and descriptions (cf. Luhmann 2002: 63p). By this, the theory becomes an observer; operating within the world society. Observers decide upon cause and effect; upon before and after – they differentiate and designate. Observers are unable to watch themselves when observing. This is because every observation has

a blind spot – namely the differentiation used in the observation process, which functions as an invisible condition for seeing. Observations, however, are not necessarily cognitive processes carried out by psychic systems; in fact they are independent of physical substrate or infrastructure (cf. Luhmann 2002: 69p).

Social systems are *autopoietic* – they are created and maintained out of themselves. By the mechanism of autopoiesis, an intra-system indeterminacy is brought into being, which can only be resolved by intra-system structure formation. *Meaning* is the medium of these operations (cf. Luhmann 2002: 66p). There are three types of social systems: *interaction systems*, *organization systems* and *social functional systems*. Interaction systems require the presence of all participants – conversely, all entities present are also participants. Examples for an interaction system are: holding a meeting, watching a play, having sex (or a fight). Organization systems do not require the presence of all their participants, which renders them much more stable. Typically, organization systems have an entry procedure, which serves as a formal threshold to the environment. Also, organization systems are characterized by an inherent goal – be it profit, missionary work or territorial control. In the modern, functionally differentiated society, communication is influenced strongly by the third type of system: the social functional system, for example the politics system, the economic system, the art system or the science system. These very special systems operate on a much bigger scale than the other two types of systems. The rise and subsequent ramification of social functional systems goes hand in hand with some of the most important developments in human history. Functional social systems possess a unique *code*, which is the paramount difference for the system's operations. Examples are paying-nonpaying in the economic system, legal-illegal in the law system and true-false in the science system. The code is comprehensive in its selection and is open to supplemental *programs*. Programs, in turn, specify the exact differentiation mechanism, depending on the relevant task (cf. Luhmann 1995: 302).

#### **IV. Structural and operational couplings**

All functional social systems are – in varying degrees – connected with each other by structural couplings. These links enable systems to connect with and get irritated by intricate conditions in their environment. In contrast to observation, structural couplings are not requiring systems to reconstruct their environmental complexity. Therefore, these conditions can remain opaque to the systems. In the special case of two coupled systems being mutually dependent on each other and undergoing a co-evolutionary development, they are described as interpenetrated (cf. Luhmann 2002: 107p). Examples for structural couplings of functional social systems are taxes (politics+economy), constitution (politics+law), contracts (economy+law), certificates (economy+education), university (science+education) and various kinds of experts (science+law or others). These couplings developed over time and are playing a crucial part in the societal communication. However, as every empirical phenomenon, structural couplings are constantly undergoing a process of change and adjustment. Furthermore, for every coupling, several functionally equivalent forms exist (or at least: could exist). This quality is denoted by the term of *contingency* – which has the approximate meaning of “it is like this, but it could also be like that” (cf. Luhmann 2002: 779-788).

The operational coupling is the “younger brother” of the structural coupling – it serves the same purpose in a different degree. While structural couplings operate both outside and inside of a system, operational couplings are only capable of the latter. Here, they establish a more condensed irritation and are thereby enabling more and richer communication. An example for this connection are specialized interaction systems in the form of meetings between organization systems – for example companies gouging prices. Structural couplings are not only important on the societal, but also on the regional level. On the example of vote buying in Thai slums, which

is possible due to specific regional circumstances, Luhmann implicitly introduces a spatial (geographic) reference. He also notes that the collision of functional social systems with particular regional conditions can produce system dynamics resulting in severe inequality within the global society (cf. Luhmann 2002: 807-811).

## V. Form

Communicative systems operate on the basis of differentiations. This happens by the coupling of *medium* and *form*. Form is the marking of a differentiation, it binds the weak medium to construct meaning. In this process, the medium is not used up – in the contrary, it is much more persistent than the ephemeral form. This becomes apparent on the example of language. Words are the medium which is coupled to arrays by various kinds of forms: rhythm, sentence structure, linguistic customs and many others. The form is needed to create meaning in the seemingly endless ocean of words. Without a form, no expression would be possible. The same applies to the medium, though – for example, when vocabulary is missing, oral language is often complemented by body language (cf. Luhmann 2002: 196-198).

The term of form is a basic element of the Systems Theory, since it serves as a universal perception mechanism for social systems. In this work, the term form in its various appearances will be used as a conceptual way of understanding social phenomena relating to slums. In the following paragraphs, several differentiations relating to space are presented in an exemplary way. This is done to highlight theoretical approaches differing from Luhmann's concept of form, and to examine selected aspects of these approaches on their usability in the context of this work.

The Marxist sociologist and philosopher Henri Lefebvre (1901-1991) coined the phrase of space as a social product. Put in different words, space is produced in a social process by the society. He notes: "... space thus produced also serves as a tool of thought and of action; [...] in addition to being a means of production it is also a means of control, and hence of domination, of power" (Lefebvre 2016: 26). Hereby, he stresses the point, that the ruling 'hegemonic class' determines, *how* (social) space is produced. The ruling class reproduces its current power structure therefore not only with means such as financial deprivation or oppression, but also using the more subtle detour of space. But what does social space mean to Lefebvre? He definitely considers it not in a Cartesian way. In the context of this work, especially Lefebvre's mention of form is interesting:

"... social space is constituted neither by a collection of things or an aggregate of (sensory) data, nor by a void packed like a parcel with various contents, and that it is irreducible to a 'form' imposed upon phenomena, upon things, upon physical materiality." (Lefebvre 2016: 27)

Lefebvre describes a spatial code, which could be developed (or: 'reconstructed') by people dealing with space. With this code, a unification of parts of spatial practice, which are at present isolated from each other, could be achieved. Among other examples, he mentions the differentiation between the 'micro' and the 'macro' level, which splits the current planning practice between the professions of architect and urbanist. Lefebvre's deep distrust of forms is manifest in the hopes he places in the removal of these. Speaking with Luhmann, Lefebvre aims at canceling any forms imposed on the medium of space. Eventually, this will contribute to the reversion of dominance structures in favor of the working class – since these forms are somehow shaped by the ruling class and therefore perpetuate oppression (cf. Lefebvre 2016: 64). In the context of her research on Delhi squatter settlements, Datta speaks of a "... distinction between 'public' and 'private' that is so central to law, state and urban development practices" (Datta 2012: 12). Similar to Lefebvre,

she notes that conceptual constructions like the differentiation between public and private (which could also be described as form) strengthen existing power structures and regulate access to resources. However, as counterpart to the authors above, the philosopher, sociologist and psychologist Michel Foucault (1926-1984) seems far more relaxed in his understanding of form. He explains spatial perception as fundamentally based on oppositions (or: differences), the primary difference being sacrality/profanity. Since the middle ages, this 'sacralisation' of space continues – but now in other manifestations such as work/leisure or public/private (cf. Foucault 1992: 37).

Form – or the concept of differentiation as agent of perception – is clearly a term used far beyond the realm of the Systems Theory. The concept of form seems to offer the unique opportunity to approach the socio-spatial phenomenon of 'slum' in the framework of this theory. Of course this cannot happen with a first-level observation due to the theory's concept of information, where observers are necessarily blind to their own differentiation mechanisms. However, with the detour of a second-level observation, information about other systems observing the slum system can be acquired. This can happen by looking at the differentiation mechanisms (aka forms) of other observing systems. Below, this approach is illustrated on the topic of inclusion/exclusion, which has been addressed by several social researchers.

## **VI. Inclusion/exclusion - a form**

Luhmann describes inclusion as the chance of a person for being socially considered. On the example of the Indian 'untouchables', he argues that inclusion can only exist when exclusion is at least *possible*. Every form has two sides and both the inner and the outer side need a 'symbolic correlate' to function, which in the case of India is present in the population share expelled from the caste system (cf. Luhmann 2002: 620p). He notes that the form inclusion/exclusion is important to such an extent that it could serve as a meta-difference in some regions of the world – for example in a case, where it is uncertain whether the code legal/illegal of the law system comes into effect at all. Among others, Datta (2012), Bhatia (2017) and Kolekar (2017) have shown this on dwellers in India, which are often not able to contact the police, when they are affected by violence or crime. Due to the functional differentiation of the societal system, the regulatory relation between inclusion and exclusion has passed over to the functional social systems. This development carries the danger of negative integration: the actual expulsion from a functional social system. No work, no income, no ID card, no stable relationships, no access to contracts and legal protection, no political education, illiteracy, lack of medical provisions, malnutrition – these factors limit what is achievable in other functional social systems. Luhmann therefore notes, that functional differentiation is not able to reach a full inclusion. Due to their rational operations, functional social systems inevitably exclude people from their respective services (cf. Luhmann 1995: 148; 2002: 630p).

However, in the view of other interpretations and an empirical examination, ambiguous meanings of the form inclusion/exclusion in relation to spatial inequality unfold. Especially the strict differentiation between in- and exclusion is challenged by practical definitions or observations. The conceptions below are therefore intended to illustrate why the form of inclusion/exclusion is arguably not as operable as Luhmann claims. UN Habitat broaches the issue of socio-spatial exclusion in its papers on informal settlements, where this term is defined as follows:

"Socio-spatial exclusion refers to the processes that contribute to the geographic marginalization of particular individuals and groups because of where they live and who they are. It is characterized by their inability to access or effectively use a whole range of facilities and resources which improve well-being and position people to take advantage of available opportunities." (UN Habitat 2015: 1)

What appears striking is the very broad scope of socio-spatial exclusion in the sense of UN Habitat when compared to inclusion/exclusion in the sense of Luhmann. Exclusion happens here already when people are unable to *effectively* use facilities, which improve their well-being or give them a better position to use future opportunities. While it seems safe to assume that Luhmann intended the usage of the term of exclusion only for drastic cases, the definition of UN Habitat becomes significant already in relatively minor cases such as the event of an individual having a low credit standing due to bad-rated securities (which makes participation in the economic system more difficult) or the closure of churches in small villages (which may deprive immobile persons from the attainment of their religious goals). In a subsequent specification, UN Habitat notes, that slum dwellers suffer much more spatial, social, and economic exclusion than other urban dwellers. In using comparative adjectives to distinguish several modes of exclusion, it becomes clear that UN Habitat applies the term inclusion/exclusion not in the fashion of a black-white-contrast but aims at creating a gradient of exclusionary practices.

The German sociologist André Meyer checked the plausibility of Luhmann's theory regarding the phenomenon of exclusion on the example of favelas in Rio de Janeiro. Using empirical data on these neighborhoods predominantly inhabited by very poor people – the *favelados* - he sought to answer the question, whether the binary mode inclusion/exclusion really mirrors the inhabitant's lives (Meyer 2012: 13). Meyer comes to the conclusion, that the idea of 'punctual exclusion', which he describes as the complete expulsion of people from some or all functional social systems, is not observable in the favelas of Rio de Janeiro. This is shown at the examples of the economics, education and politics system. Most of the favelados are working, since they rely heavily on earned income. When the favelados are not able to fulfill formal requirements of the economic system (qualification, taxation), however, they switch to alternative, non-formal employment strategies, such as working undeclared or working in businesses which are not complying with state regulations. Most of the young favelados are participating in the education system. However, in comparison to wealthier neighborhoods, a strong gap regarding participation in higher education is visible; favelados rarely hold a university degree. Also, the high costs related to school uniforms and educational material are a burden for most of the favela families. The favelados are also integrated in the politics system, where they show considerable interest in topics holding practical relevance for them. Political candidates seek for votes among the numerous favelados, which are forming district organizations to gain strength in a collective (Meyer 2012: 79-92).

Meyer notes, that the favelas of Rio de Janeiro are not only readable in opposition to wealthier urban districts, but also in opposition to comparatively more deprived rural areas. Due to huge income disparities, domestic migration of job seekers is very common – the seemingly excluded favelas thereby include migrants and grant them accommodation and occupation. However, this mechanism is not limited to favelas in Rio de Janeiro. On the example of Delhi, Chakrabarti reports about the inclusionary function of squatter settlements:

“Thousands [of] poor illiterate villagers struggle for their survival in the city milieu, to eke out an existence for them and their family members with a bare minimum income and yet they dream for a better future for their family, kith and kin and children. The city gives them hope for their survival and they in turn give their labour to the city to keep it going.”  
(Chakrabarti 2001: 4)

Insofar, favelas – or more generally: slum settlements – are the medium of both exclusionary and inclusionary effects. Consequently, Meyer refutes Luhmann's concept of exclusion related to the favelas in Rio de Janeiro. This means, that the form inclusion/exclusion is no sufficient term for the general description of phenomena related to spatial inequality. On the one hand, favelados are

clearly participating in the examined systems; on the other hand the integration of favelados is by no means equal to the participation of inhabitants of more affluent neighborhoods. What Meyer proposes therefore is the addition of a third value called marginalization (Meyer 2012: 96-100). Even though it seems tempting to counter a notional problem with the introduction of a new term, in the view of the author of this work, this strategy seems not very practical. Since the operability of a differentiation obviously depends on distinctiveness with maximum contrast, a binary notation is more feasibly.

However, in the context of this thesis, the intricacies of the exclusionary form are only intended to serve as an introductory sample. Therefore, this notional question will not be further elaborated – after all, the exclusionary form is only one of many examples for second-level-observations of slum-related phenomena. According to Luhmann, every orientation is constructed; it is a differentiation, which is updated from moment to moment. He attributes meaning only to the inside of systems, which are using and reproducing meaning as medium (cf. Luhmann 2002: 45). On their own, every form has specific advantages and disadvantages over other forms in terms of their explanatory power. In this sense, it can be argued, that by clustering and comparing these diverse modes of differentiation, a more comprehensive insight into the respective observed system can be gained.

In the empiric part of this work, a more comprehensive understanding of some forms of slum-related communication is attempted. This happens on three practical examples of form-led observations, which are modeled and examined in the course of a second-level-observation. In the following, an overview about several empirically observable forms of slum-related communication is presented. Some of the forms are frequently used by the current social functional systems, others are more unique and tailored to the specific task of observing slum communication. Depending on the node spacing of the heuristic fishing net used, the amount of possibly depictable differentiations clearly converges towards the total number of observers of a system, though. Due to the limited scope of this work, however, the amount of depicted forms is only a small proportion of the total amount of (reasonably) depictable forms.

## VII. Slum as risk

The German sociologist Ulrich Beck coined the phrase of a ‘society of risk’; in the Western industrial society, the defining logic of wealth distribution is gradually replaced by a logic of risk distribution (cf. Beck 1986: 25). A similar rhetoric, which is centered on the terms of risk or danger to human and nature, can also be observed from other sources. UN Habitat speaks of slums as “a risk to inhabitants’ health”, which have dramatic effects on the dwellers’ life expectancy (cf. UN Habitat 2015: 4). This argumentative pattern is continued throughout the examined document; here, the dangers of slums “often located in the most environmentally and geographically hazardous urban areas”, are explicitly highlighted (UN Habitat 2015: 6).

During his stay in Mumbai, the author talked with two *Mumbaikars* about how they perceived the slums in their city. A businesswoman in her forties, which mainly works in Dubai and commutes every few months to see her family, referred to them as places full of criminality. Being aware of the author’s interest, she recommended to look only at the fringe of a slum – out of a secure rental car: “They are not safe. [...] Maybe you can go there if you rent a cab. You drive to the slum, look at the buildings and then you drive away. You shouldn’t walk through it” (female city resident, 04 August 2017). When starting a conversation with a jewelry retailer in his shop in the slum *Dharavi*, the author was asked by the approximately 30-year-old: “What do you think about Dharavi?” After hearing a predominantly positive response by the author, the man requested: “Tell everybody that it is safe” (male slum trader, 05 August 2017).

In both of these excerpts of improvised interactions, the “interviewees” mentioned the topic of safety on their own and attached great weight to it. While the presumably well-earning businesswoman wanted to *prevent* the author from visiting a slum (maybe out of a feeling of responsibility, or out of shame), the slum-dwelling jeweler had the contrary in mind (maybe to increase his customer frequency). Either way, regardless of their motivation for doing so, both of them were applying the risk-based form in their communication related to slum.

### **VIII. Slum as policy-outcome**

In an article, which questions the assumption, that slums are a transitory phenomenon of fast-growing economies, the US economists Benjamin Marx, Thomas Stoker and Tavneet Suri examine the impact of urban land titling programs on the dwellers’ financial situation. Marx et al. come to the conclusion, that most individual approaches to ameliorate living conditions such as in-situ-upgrading are ineffective for the overall situation of a slum. The researchers suggest instead a massive increase of public investments in affordable housing and strategic policy support on a district-level to improve governance processes and decrease the urban slum population (cf. Marx et al. 2013: 205p). The epidemiologists and health scientists Tord Kjellstrom, Susan Mercado, David Satterthwaite, Gordon McGranahan, Sharon Friel and Kirsten Havemann write in a report to the WHO about possible actions for health equity in urban settings. Here, they identify a simple set of options of present governmental strategies for dealing with slums: “Governments have four different options in relation to ‘slums’: remove them, upgrade them, prevent them or ignore them” (Kjellstrom et al. 2007: 33). For their preferred option, the upgrading, Kjellstrom et al. see the regularization of tenure as essential, since this procedure allows official utilities to extend their infrastructure and services there, which often cannot be provided in illegal settlements.

In this institutional form of communication, where the writers take a governmental point of view, strategies and programs are seen as components which have significant influence on the phenomenon of slum. The presence or absence of governance – or, more broadly, control processes – is the defining character of this communication form.

### **IX. Slum as data**

In a paper published in 2002, the Indian architects Pratima Joshi and Srinanda Sen, which founded the planning NGO Shelter Associates in 1993 in Pune, and the UK geographer Jane Hobson, compare two of their projects of GIS-based slum mapping, which they carried out in Pune and in Sangli. Joshi et al. write, that the lack of reliable, detailed and up-to-date information about the condition and texture of urban areas in India constitutes one of the main hurdles to effective urban planning. This absence of information prevents understanding of slum settlements, which are then considered as incomprehensible, chaotic agglomerations, rather than coherent urban parts (cf. Joshi et al. 2002: 225p).

The US geo-informatics scientists Ron Mahabir, Andrew Crooks, Arie Croitoru and Peggy Agouris address the topic of data on slums on a similar, but more fundamental level. By arguing, that data collection without a consensus in definition leads to mixed results, they emphasize the importance of consistent means of measuring. The data examined by Mahabir et al. in their study was collected for specific slums and at different spatial and temporal scales. Mahabir et al. conclude, that the conduction of surveys to measure deprivation (for example with poverty mapping), or the usage of census data, proved as unreliable in the detection of slums compared with high-resolution remotely sensed imagery (cf. Mahabir et al. 2016: 407). In this regard, the 2003 decision of UN Member States on what makes up a slum household was historic, as it enabled

consistent measuring and tracking of slum demographics and -spread for the first time (cf. UN Habitat 2015: 2). Before a definition of slum was reached in a global context, other meanings dominated at local level – partly to date. Datta, however, points out that the term of slum in its framing by the UN is subject to a particular interpretation – she speaks of a ‘developmental’ notion. In contrast, the Indian meaning of slum emerged as legal terminology due to the enactment of the *Slum Areas Improvement and Clearance Act* in 1956. Through varying processes, the term of slum has developed different conceptual cores (cf. Datta 2012: 34).

Based on the material above, it seems safe to assume, that the detecting form can be described as working in two layers. First, meaning is injected into words to create definitions, and then second, these definitions are used to make phenomena measurable, countable and evaluable along the differentiation slum/not-slum. This can also be seen on the observation of slum mapping processes in Pune, which are introduced later in this work.

## **X. Slum as economic factor**

As a complex phenomenon concerning many people, slum is also viewable as part of the economic system. What Meyer covered on the example of Rio de Janeiro, has also been dealt with extensively by others. For example, UN Habitat notes, that slums influence the prosperity of cities containing them. Due to their provision of efficient mixed land use and their active economy, they create many jobs. However, these are generally very low-paid and allow the inhabitants not to progress, nor to “realize [their] full potential contribution to urban productivity.” (UN Habitat 2015: 4). The US anthropologist Vyjayanthi Rao speaks of the economic qualities of slums in a similar fashion. She writes, that “these contraventions [slums, remark of author] are both enabling and generative, [...] serving to create territories that provide locationally competitive access to income generating opportunities.” In their capacity as housing stock, in accordance with demand and supply conditions, Rao considers slums as indicators of the explosive growth of urban economies (Rao 2012: 678).

By listening to the observers above speaking of slums in terms of what they provide and demand and how they prosper and grow, the observers’ usage of developmental vocabulary becomes apparent. With the application of the utilization form, constituted by the duality profit/loss, the comprehensibility of slum communication for actors of the economic system is maximized.

## **XI. Slum as informality**

Datta regards the current research on slums as dominated by a conceptual focus on informality. Here, illegality is often subsumed or used interchangeable with practices of informality. In this theory, informality is seen as the defining condition of slum dwellers’ everyday life, through which they negotiate state-citizen relationships. Datta therefore concludes, that law or the practices of the state are not necessarily tangential to the dwellers’ concerns (cf. Datta 2012: 6p). The US-based sociologist Ananya Roy uses the term of ‘urban informality’ more broadly to describe an organizing logic that governs the process of urban transformation. According to her, informality is not really a separate sector, but rather a series of transactions connecting economies and spaces. Dealing with informality in its spatial-related form also implies a reflection how informal planning procedures take place when they produce the unplannable (cf. Roy 2005: 148-156). On the example of land formalization processes in the 1990s in Kolkata, Roy argues that formality is produced by the state. While there can be benefits resulting from enforceable property rights, formalization can also be accompanied by problems. Roy examines the transition from multiple informal, seemingly legitimate claims of several settlers, to a clear documentation of plot ownership. According

to her, this process exhibits great internal conflict potential for squatter settlements, since usually several types of informal documentation coexist and are claiming to have ownership of the land (cf. Roy 2005: 152).

This communication form is designated in this work as formality form. However, this form can not only be observed in relation to urban spatiality, but also regarding working environments. Bearing this in mind, the structures of the well-established informal rickshaw transport system and of the more recently established, foreign-capital fueled transport brokerage system in Delhi, are both explored in a later section.

## **XII. Slum as imagination**

For Rao, the observation of megacity-slums is not only linked to the question, how they are constituted, but also how they are imagined. She suspects real estate developers and state officials to understand slum not as empirical object, but as imaginary (cf. Rao 2012: 681). Rao further notes that the wide diversity of dwelling statuses and urban ways of living tends to get obscured by strong narratives like that of a major development project or a political vision:

“... in most cities of the global South, the numerical majority and their heterogeneous forms of urban occupation become invisible as they come to be absorbed into the aggrandizing logics of urban space by large-scale property developments. They also become invisible as the imaginary of the slum takes over the horizon of planning and policy.” (Rao 2012: 681p)

Imagination is inevitably linked with authenticity – a term which describes the state, when perception corresponds with being. This is due to enabling psychic systems to differentiate between hallucinations or dreams, and ‘reality’. Determining whether a matter is authentic or not, is clearly an empirically observable communicative desire. This is especially true for tourism, an industry which deals with the paradox of a mass-production of unique experiences. On the example of the well-researched slum tourism system of the Mumbai slum Dharavi, the difference of authentic/non-authentic and other specifics of the imaginary form will be pursued later on in more detail.

## **XIII. Slum as space**

The impact of planning-centered, spatial communication can be observed paradigmatically on Delhi’s 5-year plans, starting in the late 50s. These documents largely influenced the urban development of the city in the following decades. Among other things, the master plans were the basis for violent enforcement of zonal rights, resulting in the demolition of many squatter homes (cf. Datta 2012: 31p). The responsible government organ for the development and disposal of land was the *Delhi Development Authority*. The DDA had the intention to acquire urban land for capital development projects, to reduce urban sprawl by building a green belt around the city, and to remove ‘surplus’ population to several satellite-towns around Delhi. The DDA describes their goals in the introduction of the master plan as follows:

“... to check the haphazard and unplanned growth of Delhi, [...] with its sprawling residential colonies, without proper layouts and without the conveniences of life and to guide the growth of the city.” (Delhi Development Authority 1957: i)

The first master plan dealt selectively with some areas of the city. For example, elite farmhouses built on the fringe of a wildlife sanctuary, or five-star hotels built in violation of zoning guidelines, were denoted as ‘spaces of exception’ and eventually overlooked. At the same time, slums were

designated for demolition and resettlement. This continued with Indira Gandhi exerting wide-ranging powers when she declared a state emergency in 1975 to launch a 'city-beautification program', entailing forced and often violent evictions of slums across Delhi (cf. Datta 2012: 35-37). In retrospective, Chakrabarti remarks drily: "Unless planners fully comprehend the dynamics of growth, they are likely to end up planning a system which will not work. This sums up the urban planning experience of Delhi" (Chakrabarti 2001: 16).

But how can the growth of urban slums, or – more broadly: slum communication – be observed with a more promising spatial approach? According to Sanjay Kolekar, an associate professor from the department of sociology at Pune University, which the author interviewed in August 2017, the current Indian urban development plans are focused too much on centralization. Kolekar proposes a more decentralized development, which deals more with rural areas, to foster the economic opportunities of country people. Policies enhancing decentralized development could prevent some of the economically motivated migration from the countryside, leading to a reduced pressure on urban housing markets (cf. Kolekar 2017).

While the material above shows practical examples for the application of the spatial form in regard to the phenomenon of slum – for example the differentiation of planned/unplanned used by the DDA and Chakrabarti, or Kolekar with his spatial differentiation of urban/rural – Rao moves one abstraction level up. In her capacity as second-level-observer of spatial communication, she concludes that the majority of spatial communication observation views planning implicitly as tool for intervention, where the outcome is assumed from the start. According to her, this is also valid for more recent practices like participatory planning or design actions. In her view, in the current academic debate on models of megacity urbanism, the increasing focus on 'abstract processes', is especially critical. This regards for example the securing of participatory rights to the city with means of planning (cf. Rao 2012: 682). Put in different words, Rao argues that today's spatial communication is charged with other, not directly connected conceptions. Expressed in terms of the Systems Theory, this observation could suggest that due to its usefulness, the spatial form is not only used by the planning system, but becomes also increasingly adopted by other systems.

Another interesting view on space comes from the German sociologist Martina Löw. She argues, that space is created by actions of individual social actors. The actors' actions, however, are influenced in turn by legal, economic and spatial boundary conditions. Therefore, space results from actions, and actions are shaped by space – a quality, which Löw denotes as relational space (cf. Löw 2001). With its stance of mutual interdependence, Löw's theory resembles Berger & Luckmann's stages of externalization, objectification and internalization, which operate in this kind of circulatory system to construct and update reality (cf. Berger & Luckmann 1967). In fact, Löw's theoretic approach could be a very suitable conceptual base for the processing and in-feed of space into the societal communication context. Though Löw is clearly focused on actions and not communication, her term of relational space is still compatible with the observer-dependent Systems Theory. Combining Löw and Luhmann, communication from and between functional social systems affects individual psychic systems (and of course their organic counterpart) to take actions – for example the movement of body parts, the initiation of freight transports or the resettlement of Muslim minority communities. To desist from action – or taking inaction – constitutes information. These actions in turn influence the affected (or non-affected) individuals, causing them to emit communication. In this way, perceptive organisms like humans, squirrels, or yeast bacteria, act like a bridge between the environment of the physical world and the societal system (though, of course, only the former can reflect on the social meaning of these actions).

In this line of argument, spatial and art communication are – despite their resemblance in depending on conscious systems – fundamentally different. In using the spatial form, no delay

of understanding is sought after. Also, the spatial form is not used to demarcate a 'new' space against an unmarked space in a creative process. To the contrary, the character of spatial communication can be seen in the usage of well-defined concepts like measuring units, or differentiations like up/down, inside/outside, longer/shorter. While it would certainly be interesting to delve deeper into the issue of spatiality in the context of the Systems Theory, for example to develop a spatial code, the scope of this work somewhat restricts such an endeavor. Therefore, at this point, only a definition of a 'fitting' spatial differentiation in regards to slum communication is proposed. Among others, the differentiation of action/inaction constitutes an operable spatial form, since it enables systems to observe space, depicted via its involved actors.

The following diagram illustrates the forms and their respective differentiation mechanisms, which have been discussed in this chapter.

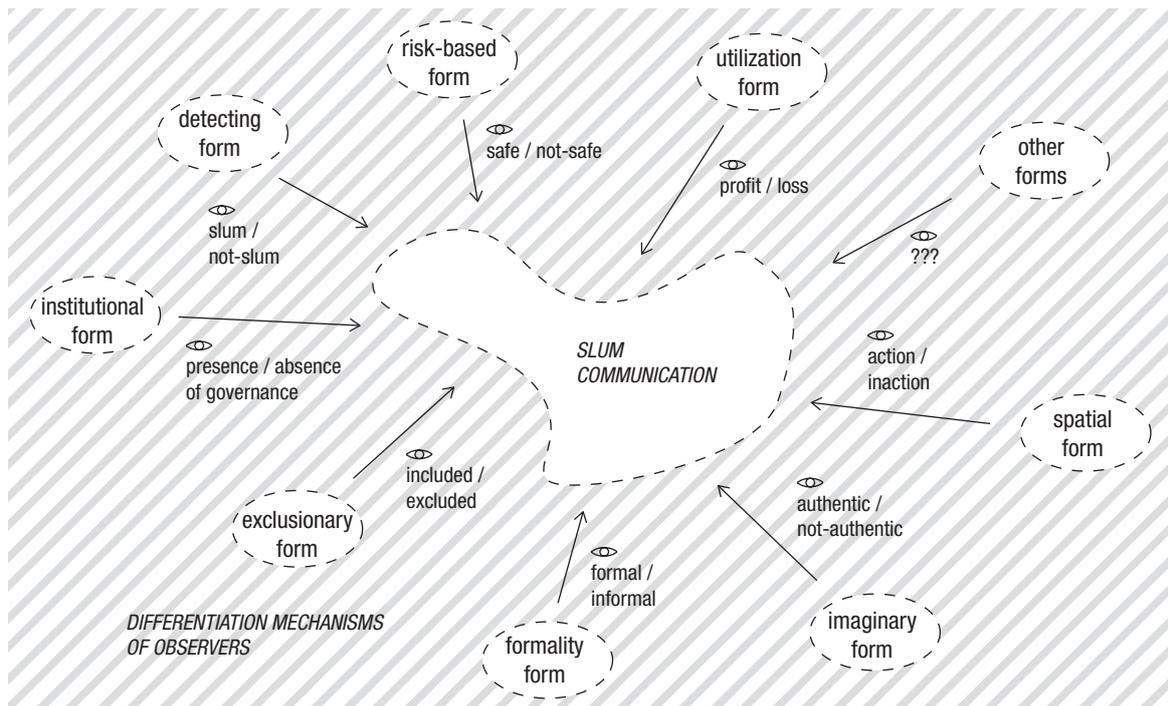


Diagram 02: Typology of slum communication forms

## **METHODS**

### **XIV. Research approach**

Mahabir et al. write about slums as social and physical constructs. They emphasize the importance of combining various perspectives to gain a fuller picture of the examined phenomenon, and argue, that a holistic research approach is necessary. Only by paying close attention to specific social, economic, environmental, and policy issues, a comprehensive social phenomenon like slum can be assessed:

“Each line of enquiry is often characterized by its own set of assumptions and interpretations, leading only to a partial view of slums. However, these different themes are all interrelated at various levels. [...] This approach requires one to consider slums as multifaceted, with various social and physical constructs at play for each slum.” (Mahabir et al. 2016: 400)

This explorative work is composed in a similar spirit. Following a qualitative approach, multiple data sources are combined to generate results with both breadth and depth. In their guide on qualitative observation and analysis of social settings, the US sociologists John Lofland and Lyn H. Lofland propagate a pragmatic, comparatively free approach to data collection and evaluation. Here, they speak vividly of a qualitative researcher as a “human vacuum cleaner, sucking up anything and everything [...] that might even remotely prove useful”. Lofland and Lofland specify that the process of data logging should be carried out in various forms; fed by field notes, interview write-ups, mapping, photographs, document collection and other means of capture. They also emphasize the importance of adhering to the quality criteria transparency and inter-subjectivity (Lofland & Lofland 1995: 66-71).

The phenomena addressed in this work are described on the basis of texts of several Indian (social) researchers dealing with slum, many of them working at US or UK universities. A German and French theoretical perspective on socio-spatiality is supplemented by observations of contemporary empirical researchers from the US, Japan and UK. Further sources are policy-related documents and methodical works. As a theoretical layer, the Systems Theory of Niklas Luhmann is applied. Supplementary diagrams created by the author are used to structure the processed data and to present results.

In three semi-structured interviews with experts and four open interviews with local dwellers, the following four thematic areas were covered: (1) planning and policy processes related to slum settlements, (2) informal work in Indian megacities, (3) the role of cast and class in slum settlements, and (4) the perception of slums from the viewpoint of non-slum dwellers. All interviewees were informed about the topic and direction of this work; the interviewed experts are named with their consent, the interviewed dwellers are anonymized. In addition, observations of a Mumbai and a Delhi slum have been performed and protocoled by the author. Other sources include a slum map from the NGO Mashal in Pune, documents from the Delhi School of Planning and Architecture, newspaper articles, and about thousand photographs taken by the author.

The guides for the semi-structured interviews were crafted on the basis of Lofland and Lofland’s detailed methodological advice and interview guide examples. Care was taken to avoid forming a tightly structured set of questions – the guides were more a list of topics to be sure to ask about in the interview. This was done to encourage interviewees to speak freely in their own language and terms about the concerns brought to their attention, but also about topics they introduced themselves. The written records of interviews are an amalgam of verbatim transcriptions, textual summaries, situational ideas, as well as notes about the setting and the personal emotional experience of the interviewer (cf. Lofland & Lofland 1995: 85-88).

## **XV. Diagramming methodology**

Diagrams are helpful in understanding and visualizing complex theoretical or empiric concepts. Despite their indisputable usefulness, however, to the knowledge of the author, the Systems Theory has not developed any serious visual grammar yet. Maybe sociologists do not draw? Of course, this is not true – in fact, many systems-related figures appear in sociological texts. However, only a fraction of these transcends the mere point-and-arrow-scheme, which is commonly known from mediocre PowerPoint-slides. Whatever the case may be, in working on the theoretic aspects of this thesis, the author came across this odd gap in the Systems Theory’s tissue. Since there is, by now, no really accurate example of a Systems Theory diagram, the inception of such a presentation form is attempted in the following. For this purpose, some “regular” sociological diagram types are presented. These diagrams are intended to serve as informative and contrastive types, and are evaluated regarding their explanatory power in terms of the Systems Theory.

Subsequently, some key characteristics of these diagrams are typologically juxtaposed to identify necessary conceptual parts of a Systems Theory diagramming language in an explorative way.

(1) *Network analysis* is a methodology, which studies social networks on a structural level. Its actor-centric approach assigns people or organizations to network nodes, which can be visualized by a *sociogram*. These nodes feature connections to some or all other nodes of the network. Network complexity correlates with the amount of connections, which rises exponentially with the amount of nodes in a system. Consequently, complexity in this kind of network is typically hedged by the number of empirical actors of which a node is constructed. For example, in an economic analysis of a small town it would be unfeasible to list every single worker – a likely complexity reduction would be to agglomerate data acquired from individual workers into a network which only consists of nodes representing companies (or even only industrial sectors). This procedure of radically breaking down social data into nodes and connections enables the use of mathematical evaluation methods. Through the application of the graph theory, eventually some deductions regarding composition, structure, interconnectivity and other factors of the network can be made (cf. Knoke & Kuklinski 1982: 14-19). In the form of a Moreno-sociogram, social links between human actors in online- and offline social networks with different types of connectivity can be shown. Normally, these diagrams do not contain statements about the temporal development of the system; only a cross section is shown.

(2) The causal loop diagram is a flow model of feedback-processes, which lead to different outcomes. These outcomes, again, result in processes. In general, the probability of events, logical and-or-structures, as well as positive or negative external influences are depicted. The causal loop diagram is often used in consulting- or trainer-related fields as for example change management. Actors are not necessarily part of this type of diagram. A specific example of a causal loop diagram is the Energy Systems Language (ESL) by Howard T. Odum, which focuses on energy flows in systems of any size. For example, ESL is used in Biology for the modeling of ecosystems, where complex seasonal patterns can be shown as combination of several environmental factors. Also, ESL is used for process control in Informatics and for macroeconomic models in Economy, where environmental, geological and social factors interlace (cf. Hall 1995: xiii).

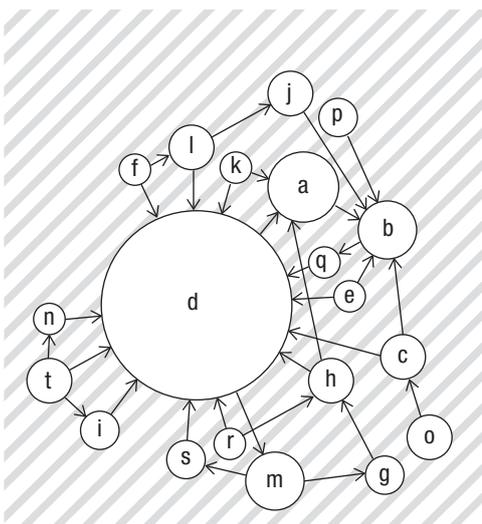


Diagram 03: Moreno sociogram

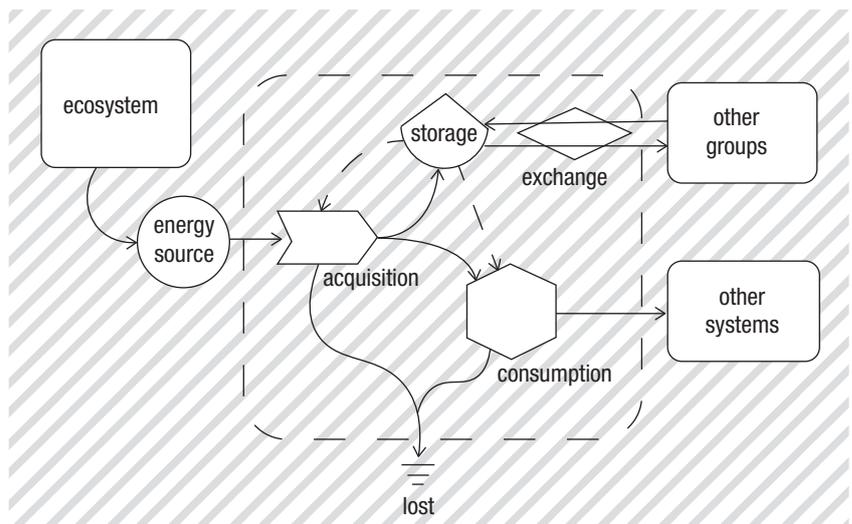


Diagram 04: Energy Systems Language

(3) Organizational charts are structured hierarchic representations of power and/or responsibility in a demarcated organizational space. For example, such charts show the formal organizational structure of a department, a company, or a group of Nations. Depending on the type of diagram, actors can be individual humans (mostly in the form of positions), organizations, or groups of (dif-

ferent-sized) entities. Sometimes, the presentation of the actor's relations is functional (manufacturing processes) or pseudo-functional (chain of command). Sometimes, the movement of goods or orders is visualized, and thereby a flow dimension is introduced. However, often no such flow is visible and the chart only shows (reputed) power structures. The nature of such a chart is static; not change but stability is sought after. Where social structures are instable, an organizational chart can create facts and solidify relations.

(4) A special form of organizational chart is the family diagram. In this presentational form, the structuring factor is heritage. Obviously, every actor is (or was) a living being, for example a human, pedigree dog, or fruit fly. In the diagram, the family system remains static; the past is known and the future has not happened yet. Time as an organizing element featuring thresholds such as birth or death is not explicitly shown. However, it is omnipresent in the interpretation, which makes it an ambivalent factor. The unusual stability of family diagrams, where no actor can be erased in retrospective, marks a difference to 'normal' organizational charts. Also, despite the immanent power-structures of parent-child relations, commonly no flow of orders is visualized.

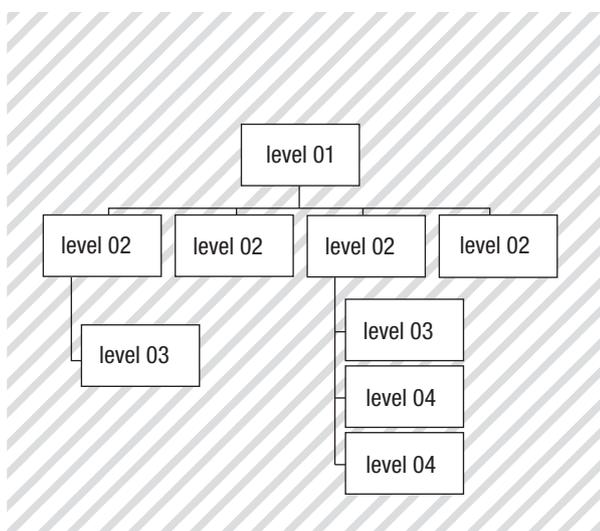


Diagram 05: Organizational chart

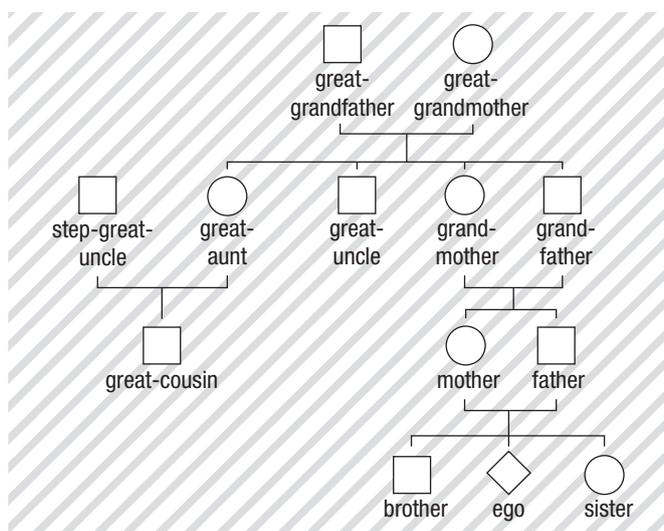


Diagram 06: Family chart

Based on the examples above, it can be argued, that there are notable differences in the presented types of social diagrams. The most important factors of these diagrams are identified in this work as flow, time and presence of actors. None of the presented diagrams fulfills the requirements to be used for modeling empirical phenomena in the framework of the Systems Theory of Luhmann. In this theory, actors in the form of systems exist – but there is nothing, which flows between them. The systems follow no input/output-scheme, but rather the already outlined mechanism of observation. Here, no information is passed over from one to another system – instead, an observing system adapts to the observed system by means of its internal differentiation. Thereby, it creates its own meaningful information. Another peculiarity is the nonexistence of temporality in such a modeled system. The world society constantly regenerates ('refreshes') its state by modifying the system's relations to changes. For this reason, a still image of this process can only depict the (at that point in time) presence and nothing else. Essentially, a chart which complies with the Systems Theory has actors, but shows no flow and no time. Having said this, the mechanism of couplings is also an essential part of any such diagram. For this specificity, however, no other diagrammatic blueprint has been found by the author. That is why the mechanism of couplings constitutes one of the diagrammatic novelties, which was specifically developed for the usage in this work. The three empirical examples of slum-related phenomena, presented in a chapter

later on, should therefore not only be viewed in respect to their mouldability with the toolkit of the Systems Theory, but also in their quality as fodder for the experimental setup of a methodical-diagrammatic endeavor.

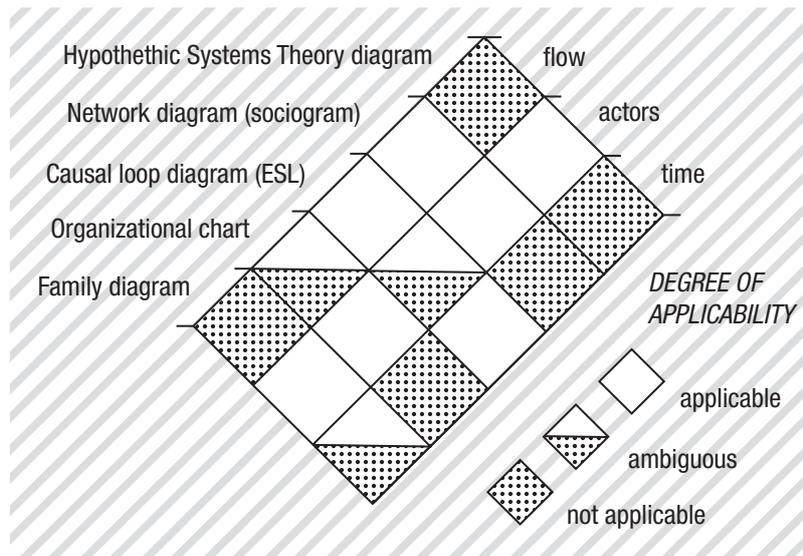


Diagram 07: Typology of present system diagrams

## XVI. Reflection of research

In general, the rules of the science system require a researcher to be aware of the differences between him/her and the observed settings or interviewed persons. According to the UK geographer Nina Morris, this is especially true for social research in developing countries, carried out by researchers coming from developed countries. In her work, she aims at designing a culturally sensitive framework for research in these very countries (cf. Morris 2015). Apart from the issue, why Morris thinks that researchers from the UK need an ethical guide in dealing with residents of African countries, but not vice versa, it could also be questioned, which limitations such a guide – centered on the constructed difference of developing/developed – evinces, and how its usage consequently alters the research.

However, the author of this thesis shares Morris' opinion that factors like background, motivation and role of a researcher are important for the subsequent interpretation of results of his/her work. On that account, at this point, the author discloses his background. The observations outlined in this work belong to a 23-year-old psychic system, structurally coupled to a white male organic system, originating from a Western functionally differentiated society. The phenomena examined, persons interviewed, and settings observed, differ both in geographic and in social terms from the author's previous horizon of experience. However, not only a researcher's horizon of experience matters, but also his/her methodological viewpoint, since every research approach undoubtedly constructs knowledge from a different perspective.

The Systems Theory in the author's understanding can be compared to a scaffolding ready for various supplements. It is constituted by an observer-centered constructivism – truth is constructed by observers and objectivity is in the eye of the beholder. Clearly, this poses a major problem for empirical social research: the problem of transforming the inherent indeterminacy of the theory into a sound research methodology. One feasible way to meet the requirements of scientific work is to make it inter-subjectively understandable, and to untie its results as much as possible from the original observer. To the author it seems, that a practical way to achieve these

goals is to monitor potential tracking errors. Such errors can mainly occur on the part of the observing person, on the part of the heuristics used for observation, and on the part of blank spaces in the methodology used for analysis. In the following, these potential tracking errors are further elaborated.

(1) Distortions on the part of the observer (the researcher) include personal and professional background, professional biases, motivation, appearance, origin and many more. As a privileged Austrian student belonging to the financial and educational upper stratum of the world society, the author was clearly treated differently by the interviewed Indian individuals, than the 'guy next door'. This outsider status provided benefits such as eased access to educational institutions or permission to ask 'stupid' questions. However, the author's insufficient language ability in Hindi made some interactions more complicate or even impossible. Generally, the author perceived substantial curiosity towards him and his project. Some of the interviewed experts strived for academic exchange or wanted to raise awareness for slum-related phenomena. Some of the dwellers wanted to sell goods or come into closer contact.

(2) Biases on the part of the used theory mainly consist of its respective presuppositions. In the Systems Theory, social action is observed from the viewpoint of communication, which is assigned to the concept of system-environment. The theory's constructivist bias – a fascination with function – explains the wealth of empirically discernible phenomena by means of systems. Essentially, the theoretical focal point lies more on the (re)construction of a status quo, than on the formulation of a vision. In the best case, with this approach, phenomena are assessed at how they are and not at how they should be. However, danger lies in adhering to once described models; they should always be checked on their informative value, and should be adjusted where necessary.

(3) Errors on the part of data processing can be manifold; in qualitative research they tend to be notoriously difficult to spot. How can an open, explorative evaluation method be right or wrong? Some principles of qualitative research have been dealt with already in a previous chapter. However, in the view of the author, the diagrams in this work make up the most uncertain component. In the diagrammatic medium, textual complexity is reduced to an array of graphic elements. For this process, which compresses the already compressed text even more, much less conventions exist. Therefore, a diagrammatic overview should not be mistaken for a comprehensive representation of its original full content. However, diagrams are also dangerous in other respects. Since theoretical or processing-related void spaces step out clearly in diagrams, a creator of these can be tempted to not only answer the questions, which are answerable, but also fill the gaps, which are not to be filled. The diagrams featured in the following chapter, which represent three explorative empirical models, should therefore be received comparatively critical as the text, on which they are based.

## **APPLICATION**

### **XVII. The Pune Slum Mapping System**

Pune is a multi-million city located approximately 150 kilometers south-east of Mumbai. The city was chosen for this work since about 40% of its population live in slums. According to Kolekar, some of the city's slum settlements date back to the colonial time, where the British administration allocated societal marginal groups, amongst others also Roma people, to places lacking basic infrastructure. Kolekar argues, that the still very prevalent exclusion of Pune people living

in slums is caused by the once attributed label of criminality. According to him, the exclusion in Pune comes now mainly from the public sphere and is centered on the belief that these settlements are insecure and inhabited by 'bad' people. Kolekar states, that this stigma of criminality continues, and thereby fosters a reluctance against interaction with slum inhabitants. This, in turn, leads to housing segregation. Without social interaction however, there is no development (cf. Kolekar 2017).

The following attempt of modeling the *Pune Slum Mapping System* is largely based on a comprehensive research paper of the NGO *Shelter Associates* and an interview with an architect-planner of the NGO *Mashal* (Maharashtra Social Housing and Action League). Shelter Associates and Mashal are two important local planning-related NGOs, which are or were active in the field of slum-mapping. These NGOs seek to address social inequality and detrimental housing conditions from the viewpoint of planning, that is, by using the detecting form and the spatial form regarding slum communication.

To understand past and present planning processes in Pune, a look at Roy's experiences with spatiality in the context of urban Indian slums on the example of the megacity Kolkata offers a good introduction into the complexity of the phenomenon. Based on her social research, conducted in 1997 in Kolkata, Roy found out about the tremendous uncertainty at that time regarding the tenure status of large amounts of land at the fringes of the city. After multiple unsuccessful visits at the office of the *CMDA* (Calcutta Metropolitan District Authority) she was finally received and got an answer on her questions regarding land records for the southeastern periphery of the city. She reports in disbelief:

"I was told there was no established system of maintaining records of land ownership and acquisition for the fringes. The senior officer admitted that this had created tremendous ambiguity regarding vesting, and that the problem was particularly acute in the open tracts of the eastern periphery." (Roy 2004: 156f)

According to Roy, the responsible officer was very outspoken and said: "Yes, no one really knows which part of which plot is vested. Not even I. There are no maps or boundaries. We deal with it on a case-by-case basis." (Roy 2004: 147). Based on this astounding example of legal uncertainty in the Kolkata of the late 1990s, where the best available city map was made 75 years ago by British colonial officers, the importance of cartography for several social functional systems such as law and economy is easily comprehensible. In some cases, these defects are remedied by now. In other cases, however, especially regarding slum settlements, legal fluidity due to a lack of maps still persists.

Mahabir et al. write, that along with advancements in technology, also data collection methods of slum information have changed fundamentally. These include the usage of GIS (geographic information system), GPS (global positioning system), mobile computing, and web services such as GoogleMaps or OpenStreetMap. By using these more advanced technological methods, the previous top-down approach in the collection of spatial data in deprived neighborhoods has been supplanted by a new bottom-up approach (cf. Mahabir et al. 2016: 409p). The work of Shelter Associates founders Joshi et al. can be seen as a good example for this new, technology-driven approach.

In the early 2000s, in Pune there was a massive lack of reliable information about the location and size of slum settlements. Since the local authorities, including the *Pune Municipal Corporation*, had no system of data collection, they could not establish how many people, or which houses, were affected by development schemes. Therefore, some projects proceeded without provisions for resettlement of the affected population. The alternative option to this was to end

development projects regardless of possible negative implications for the overall urban development associated to that action. Whether or not that approach was taken, depended largely on the influence of local councilors, supported by the affected slum dwellers (cf. Joshi et al. 2002: 228). The motivation of Shelter Associates is to break this unsatisfactory status quo. Therefore, they aim at collecting accurate data, and make it available for the purpose of inclusive urban development (cf. Joshi et al. 2002: 225). The data collected by Shelter Associates includes many socio-spatial facts:

“Data collected included: settlement name; address; ward number; survey number; ownership of land; number of years established; number of households; whether in a disaster-prone location; existing level of community services; number of community taps; number of community toilets and toilet seats; whether there are separate toilet seats for men and women; number of municipal bins; number of street lights; availability of drainage (covered/open); community organizations; ongoing education/health/micro-credit programmes; and proposed use of land for public purposes, if any.” (Joshi et al. 2002: 231)

Sharad Mahajan, Executive Director of the NGO Mashal, commented in an interview with the author on the importance of such information for planning processes:

“We basically see what are the real needs of the people and then try to convert it and get financial support from the [Pune Municipal, remark of author] Corporation. [...] Collecting the information is our passion and we think that without information things are difficult to plan.” (Mahajan 2017)

Mahajan emphasizes the importance of spatial documentation for the purpose of development. He estimates that 30% of the 564 slum pockets in Pune are on governmental land (central government, state government, railway authority) and 40% on private land. In his mapping project “Slum Atlas of Pune City”, conducted with the help of 27 PhD students, he documented 164 slums in total by GIS, making Pune one of the best documented cities in India. This mapping is supported by local universities and financed largely by the local government.

A few years before that, the NGO Shelter Associates managed to interest a top-level administrative service officer in the Municipal Corporation for their mapping project. As a consequence, the commissioner strongly promoted the project. However, after his transfer to another job, the interest of the Municipal Corporation waned, since the project was no priority for the new commissioner. Eventually, this led to the closure of the project. In the nearby city Sangli, Joshi et al. worked with a much younger organization with less change-resilient structures. In their paper, they come to the conclusion, that building up interest and capacity of officials at all levels (not only at the top level) and creating ownership of the project due to early-stage participation eases the cooperation with state actors such as the Pune Municipal Corporation. Also, they argue, that the source of the project funding should come from outside (in their case: not from the Municipal Corporation) to make the project less vulnerable to politically motivated or staff-related changes (cf. Joshi et al. 239p). Regarding the topic of political interference, they comment:

“Pune has always been a politically ‘active’ city and politics at the state level immediately affect Pune’s local politics. The political dynamics are very volatile and Pune’s municipal commissioner has a difficult task finding the best balance between urban development administration and local politics. Projects therefore develop or are called off according to the inclination of the civic chief.” (Joshi et al. 2002: 236)

Mahajan speaks about this coupling of planning related decision making with the political functional system in a similar fashion:

“Ours is a very vibrant democracy. They have a lot of relations. There are central government relations, state government relations, local body relations, everybody has lots of relations.” (Mahajan 2017)

Other than Mashal, the NGO Shelter Associates is not relying primarily on university students. In order to get the headcount to carry out a slum survey in Pune, they cooperated with the CBO (community-based organization) *Baandhani* (‘building together’). With expertise from Shelter Associates and with funding from the GO Pune Municipal Corporation, they numbered houses, measured slum boundaries and determined existing infrastructure (electric- and light poles, manholes, water points). Subsequently, this data was made available to government officials to perform work, which they would otherwise not be able to carry out, for example declaring slum settlements to make them eligible for basic improvements, or provide photo passes to slum dwellers as prove of residency. Additionally, due to their involvement in the collection process, the community members also own the information about their slum settlement, which can be helpful in negotiations with state actors.

At present, in many Indian cities the “key triangle formed by the communities, the government and the NGOs” (Joshi et al. 2002: 240) builds interaction systems of spatial transformation. Based on the data presented above, it can be argued that this ongoing spatial transformation is brokered via communicative interactions and coupled with organizational and social functional systems. However, this was clearly not always the case. In a process of differentiation, NGOs have stepped into the previous instances of planning-related interactions between only GOs and CBOs. Before their interference, spatial communication was mainly coupled with the social functional systems of politics, economy and law. Communication in the form of policies and masterplans (thus documents or plans not depicting the status quo, but the desired future) observed space in an interpretative way by processing only comprehensible (“readable”) communication. Where there is no submission, complaint or lawsuit, there is no space. Therefore, only a tiny fraction of the physical reality and its constituting social communication appeared on the radar of this very specific communication, resulting in policies simply factoring out hundred thousands of people living in slums. The influence of these shortened communicative processes, however, is massive. Space (or more precise: spatial communication) observes the master plan or policy communication, and adapts to it via structural couplings – be it with the means of power (forced evictions), money (development projects) or law (declared illegality of tenure).

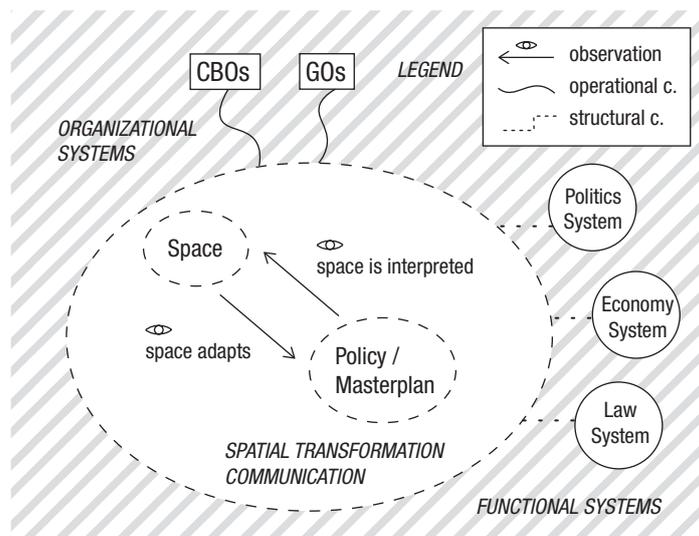


Diagram 08: Past interaction system of spatial transformation in Pune

The author argues, that with the introduction of NGOs into the effective range of the cycle of mutual spatial influence, a third agglomeration of communication comes into existence. The newly introduced actor, consisting of planning NGOs, is now also operationally coupled to communication on spatial transformation. As a result, a new sub-system, concerned with mapping, is formed. Associated with this, also a new observational process emerges: the intermediary stage of spatial interpretation. Now, with structural couplings to the science system, and arguably also the education system, external expertise steps in. Communication related to measuring and mapping undertakes the task of interpreting 'raw' spatial communication. The mapping/measuring interaction subsystem proves to be a more holistically and analytically processing apparatus, which has less strong couplings to the politics and economics system – at least compared with the body of policy communication. Therefore, it creates a layer of more or less balanced information, which it makes available to the policy/masterplan subsystem for further interpretation. Now, with the effort of mapping, not only upper-class condominiums show up on formal documents. The lack of infrastructure in slum settlements and their exposition to natural forces, as well as their population density, and much more information, now lies on the table of decision-makers in governmental planning departments. Additionally, this information is also available to the community leaders of the relevant areas, which can in turn use it to change space in their favor.

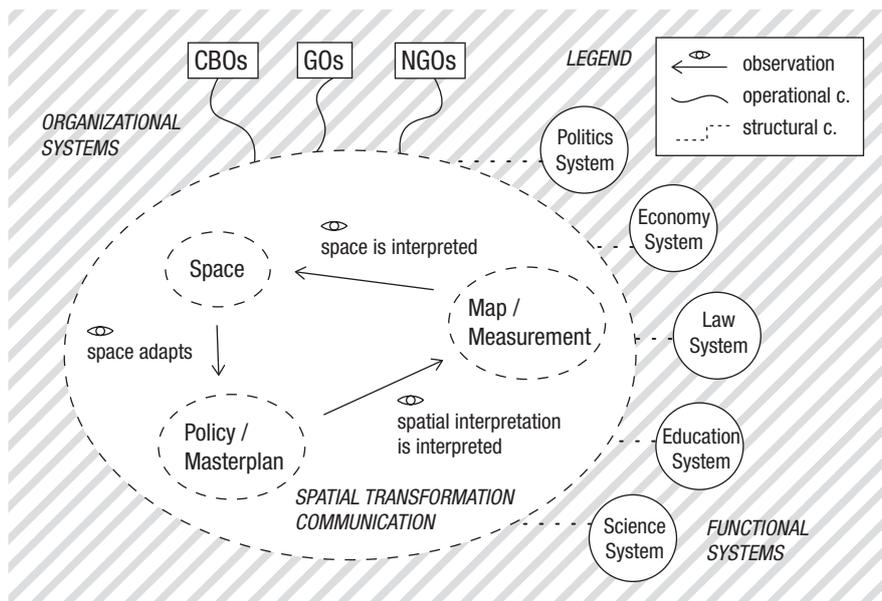


Diagram 09: Present interaction system of spatial transformation in Pune

On the case of Pune, the proposed functioning of the interaction sub-system mapping/measuring is depicted. A body of organizational systems, operationally coupled to the education, law, politics, economy and science system are exerting their observations on communication, related to mapping and measuring. Here, every organizational system follows its goal-driven interest in its own focus and fashion of observation. The measuring- and mapping-related communication is perceived with the spatial form and the detecting form and is structurally coupled to several social functional systems by their symbolically generalized communication media.

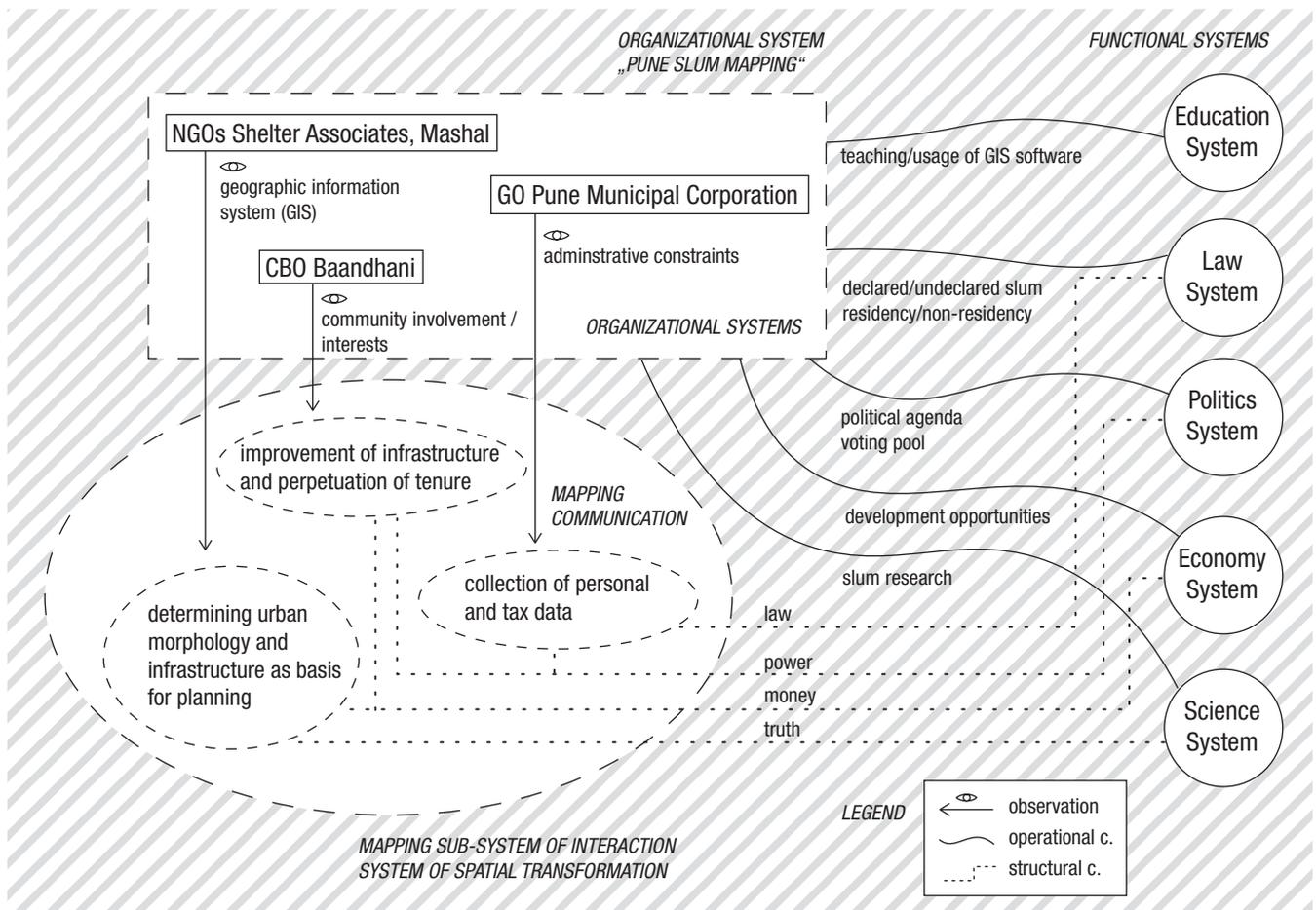


Diagram 10: Pune slum mapping system

## XVIII. The Delhi Informal Transport System

In Delhi, all requirements for a strong informal sector are fulfilled. The city has an abundance of cheap labor due to its large hinterland of poverty; it has good infrastructure in terms of streets and public transportation, and many employment opportunities. The high number of poor migrants creates demand for low priced goods and services – producible in a decentralized manner, taking place without formal planning interventions (cf. Chakrabarti 2001: 16). The informal sector of Delhi is flexible and has the capacity to absorb large quantities of manpower. Therefore, the majority of the city’s migrant population has found employment in this sector. Industry, trade and transport depend to a large extent on the cheap labor of these often illiterate workers from rural villages; they keep the city going and growing (cf. Chakrabarti 2001: 8-10).

The author interviewed the sociologist Akriti Bhatia on this topic, who writes her thesis on informal work at the University of Delhi. According to Bhatia, most of the largely deprived informal workers live near to their working place in one of the many small-sized slums, dispersed throughout Delhi, to minimize commuting time and costs (cf. Bhatia 2017a). Many of these informal workers operate within the transport sector, the most excluded of them being rickshaw pullers. In a study on rural-urban migration and urban poverty, the Japanese sociologists Takashi Kurosaki and Yasuyuki Sawada cooperated in 2007 with the Indian sociologists Asit Banerji and S.N. Mishra to conduct a pilot survey on socio-economic profiles of rickshaw pullers in North-East Delhi. Here, they randomly selected rickshaw pullers waiting for passengers at crossings or street corners, interviewing in total 80 rickshaw pullers and 26 rickshaw owner-contractors (cf. Kurosaki

et al. 2007: 8). They write that the usually low-skilled migrant men move the two-wheeled passenger carts with their muscle power through dense traffic for ten or more hours per day, often seven days a week. About a third of the rickshaw pullers can only afford to live in jhuggi jhopri clusters, in their contractor's rickshaw shed or at the footpath (cf. Kurosaki et al. 2007: 10).

Kurosaki et al. report that the surveyed pullers who are settled in the city, as well as the migrants from neighboring rural areas, almost exclusively belong to socially and educationally disadvantaged *other backward classes* (OBCs), *scheduled castes* (SCs) or *scheduled tribes* (STs). The latter two of them are in India also referred to as *dalits*, while in Western media they are sometimes denoted as *untouchables*. All of the interviewed rickshaw pullers showed an extremely low economic status, and almost half of them were illiterate. The migrants' primary motivation of moving to the city was their desperate financial situation at their places of origin. Despite its low remuneration, the activity of cycle rickshaw plying constitutes a reliable source of employment at the grass root level and enables income transfers from the urban economy to the remote rural economy, thereby alleviating rural poverty (cf. Kurosaki et al. 2007: 13-32).

However, not all modes of work in the informal transport system in Delhi are as excluded as cycle rickshaw pulling. In a study on informal public transport modes in India, the traffic researchers Megha Kumar, Seema Singh, Akshima T. Ghate, Sarbojit Pal and Sangeetha Ann Wilson present comparative current research on Indian urban transport systems. They report about another very common form of informal transport: motorized rickshaws powered by electricity or by fuel, the former being subsidized by the state, but more capital-intensive. Auto rickshaws are not as nimble as cycle rickshaws, since they have a higher turning radius and more space for passengers. Nevertheless, they are flexible enough to drive through the dense urban network of Delhi and navigate the city's narrow streets (cf. Kumar et al. 2016: 105). Even though the advancement from pulling a cycle rickshaw to driving an auto rickshaw looks like an imaginable career, this path rarely occurs in practice. Kurosaki et al. note, that the two sets of occupations have little in common, since the automotive sector requires a higher level of skill and capital, than what the usual rickshaw puller can put up (cf. Kurosaki et al. 2007: 35).

Bhatia reports that getting a rickshaw in a documented way requires proofs of residence such as water and electricity bills, supplementary to identity documents, which is a very high administrative threshold for migrants. Therefore, similar to the cycle rickshaw pullers, also most of the auto rickshaw drivers rent their vehicle from an owner-contractor. From their place of residence – often a slum – the drivers go to the owners' rickshaw stand to rent the vehicle on a daily basis. Even though the high costs of rent significantly cut down the drivers' profit, renting is very popular. This is due to several factors: first, few drivers have enough capital or a good enough credit standing to afford their own motorized vehicle; second often they have no place to securely store their rickshaw – while battery-powered e-rickshaws also need a power connection to be charged. Since theft of rickshaws is very common and usually the stolen vehicles are not recoverable, many owners lack a secure parking space and are forced to sleep on their vehicle to prevent theft. Here, work and live come together closely, where space is compressed to the mere minimum (cf. Bhatia 2017a). On the case of battery rickshaws, which are particularly common in Delhi due to the city's embrace of green technologies, Bhatia gives an impression of their unfavorable public perception and their cash-cow-status for traffic policemen:

“Battery rickshaws have a very shaky legal trajectory, a lot of them does not have a license. They are defaulters, they are not legal – that's how they are labeled as. And the traffic police is constantly extracting a lot of fines from them, as high as 1.000 rupees. But they don't do it legal, they do it in their pocket. [...] It is a space that allows a maximum of extraction and appropriation.” (Bhatia 2017a)

In a 2007 research paper, the US city- and regional planners Robert Cervero and Aaron Golub give a global overview of some general characteristics of informal transport systems. According to them, operators in the informal sector have some advantages over their formal counterparts – due to their flexible and often ad-hoc-structures, they are able to respond quickly to changing market conditions and are more in-tune with their passenger’s demands. By ignoring (some) regulations and by often evading taxes, they can charge comparatively low costs (cf. Cervero & Golub 2007: 448). These matters touch the very core of informality, which Cervero and Golub define as follows: “Technically, informal services are those operating without official endorsement. Usually this means vehicles and operators do not have appropriate licenses, permits, or registration papers from public authorities to provide collective-ride services to the general public.” (Cervero & Golub 2007: 446)

This lack of complying with governmental regulations also means, that most of the vehicles do not fulfill safety standards, and are not insured. Particularly common is the retrofitting of vehicles to carry more passengers, than originally intended by the manufacturer. Typical retrofits are additional seats and luggage compartments, as well as extra handrails and footboards. The increase of the vehicle’s passenger-carrying capacity also increases the potential profitability of operations. With original seating capacities of about 3 to 4 passengers often doubled to 7 or 8, retrofitted Indian informal transport vehicles such as the versatile *vikrams* or the minibus-like *tata magics* severely violate the terms of the contract carriage permit. The custom modifications are rarely tested and therefore pose questions regarding the vehicle’s roadworthiness (Kumar et al. 2016: 106p).

Though many official standards are not met, these standards still exert some form of external regulation by determining what is possible, what is tolerated and what is strictly prohibited. In this often ambiguous greyscale between just and unjust, not only formal law, but also local police pressures and gangsterism work together. Also, coordination concerns like the absence of official structures – as for example timetables or schedules – force the informal transport sector to a certain degree of internal self-regulation. This can happen in the form of social norms, customs or ‘gentlemen agreements’, which create a mutual stability of expectations between the different market players (Cervero & Golub 2007: 446-449). In the case of Delhi auto-rickshaws, self-initiated cooperatives in the form of driver groups and unions provide a structure for individual drivers by determining maximum amounts of vehicles for specified areas. Since most of the personal-hire auto rickshaws illicitly have no fare meter installed, the unions also set fixed fares for certain routes to prevent price wars (Kumar et al. 2016: 106). In the diagram below, the functioning of the Delhi informal rickshaw transport system is depicted.

With the appearance of professional transport brokerage companies like Uber or Ola in the early to mid-2010s, the Indian transport market changed significantly. These companies, which are valued billions of dollars, and are often referred to as ‘disruptive’, connect drivers and customers via technological interfaces in the form of smartphone applications. For this service, they charge a fee from the driver, which is settled cashless and ranges from about ten to thirty percent of the overall fare. In a 2017 newspaper article, Bhatia writes that Uber and Ola were quickly recognized as ‘revolution in the private transport segment’, which generates thousands of jobs in several Indian cities, raises the standard of living for the drivers, and improves the customer experience through reliability, safety and a low price (cf. Bhatia 2017b).

In his stay of several weeks in Delhi, the author used both auto rickshaws, and Uber and Ola cabs. Compared to the ubiquitous fare negotiating situations with rickshaw drivers, the polished experience of booking an *Uber* via smartphone can be very convenient and, surprisingly, even be cheaper. However, it was difficult for the author to find supplementary empiric research

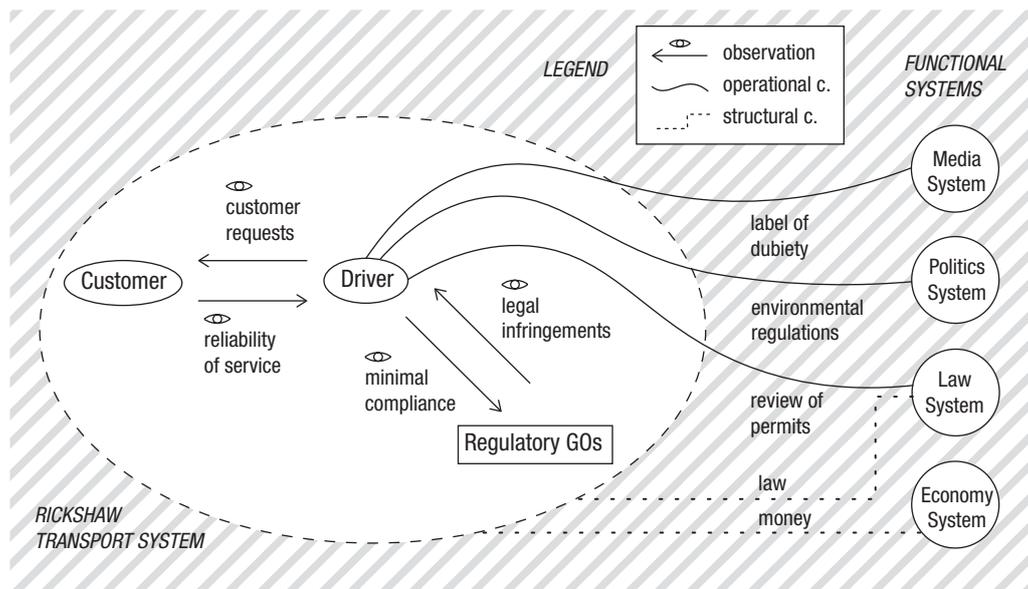


Diagram 11: Delhi informal rickshaw transport system

dealing with the topical issue of transport brokerage companies in the Indian informal transport sector. In Western settings, this phenomenon received more attention of the scientific community so far. In a recent paper, the UK-based management researcher Mareike Möhlmann and the US information systems researcher Lior Zalmanson examined algorithmic management methods of the ride-hailing company Uber in two Western cities. Uber is often seen as top dog in its field by setting standards and operating in more than 500 cities worldwide. Though the study's data is certainly not fully applicable to the situation in Delhi, in the view of the author of this thesis, the researchers' focus on a company operating in both settings suggests a certain comparability of results.

Among other things, Möhlmann and Zalmanson looked at the automated dynamic price-setting feature named 'surge pricing' in relation to the self-determination of the companies' drivers. Officially, the drivers have autonomy over their work hours, the areas they want to serve, and the cars that they lease or own. In the context of their article, Möhlmann and Zalmanson define 'algorithmic management' as oversight, governance and control practices conducted by software algorithms over many remote workers (cf. Möhlmann & Zalmanson 2017: 2). After conducting 19 interviews with drivers in New York and London, supplemented by data from the uberpeople.net forum, where drivers exchange views on work-related issues, the researchers performed a grounded analysis on their data. On the part of Uber, they report behavioral manipulation of its quasi-employees by using opaque allocation- and assessment algorithms. On the part of the drivers, Möhlmann and Zalmanson observed widespread individual attempts to game the companies' system. For example, drivers switched between several rival ride-hailing platforms like Lyft, Juno, Via and Gett to maximize their individual earning potential (cf. Möhlmann & Zalmanson 2017: 11p). In the forum, they also found evidence of collective driver efforts to game Uber's app system, which they describe as follows:

"In the absence of any official union, drivers utilized the UberPeople platform to promote ideas for mutinies or rebellious acts that would improve their conditions. One possibility mentioned in the forum was organizing a mass deactivation of drivers from the system, which would then lower supply and increase surge pricing." (Möhlmann & Zalmanson 2017: 12)

In the relationship of Uber to its drivers – and vice versa – trust seems nonexistent. Ola and Uber refer to their drivers as ‘contractors’ or ‘freelancers’ and stress that they can leave their occupation any time by simply switching off the companies’ app. Bhatia calls this flexibility-related phenomenon an informalization of the formal sector. She notes, that the Uber business model relies on the exploitation of its drivers for being able to undercut other established transport providers, such as auto rickshaws. However, this endeavor requires a steady supply of ‘aspirational’ drivers, who – in the hope for upward mobility – are willing and able to take the risk of buying or leasing a car, and quitting their old job. While some more affluent auto rickshaw drivers manage this transition, the majority of Uber drivers stems from the urban middleclass. To recruit drivers with this middleclass background, attractive cash incentives are distributed by Uber and Ola (cf. Bhatia 2017b).

Interestingly, the new personal transport system, epitomized by cutting-edge technology firms employing reliable, hand-picked drivers, is seen by the Indian public and state in a completely different fashion than the informal rickshaw transport system. While rickshaw drivers are often perceived as shady, Uber conveys formality to its customers by following carefully designed processes, aimed at a maximum of positive user experience. However, at the same time, the transport brokerage organizational system reproduces the relationship of informal rickshaw drivers to the public authorities. This can be modeled with a mutual observation, where both argue to be tricked or short-changed by the other. In this new personal transport system, a seemingly contradictory double-bind communication strategy is applied to convey both formality and informality at the same time, in each case matched to the recipient. Here, the previously exposed informal structures are now encapsulated into a ‘formal’ framework, where customers are assured of the quality of recruiting processes, and public bodies hope for new and better jobs due to ‘revolutionary’ changes in the private transport system. These expectations of formality are raised, although Ola and Uber are unwilling to actually sign employment contracts, and not all drivers really possess an appropriate license as ride service provider. What becomes visible with the application of the formality form, is an ambiguous system where, under the surface, formality is intertwined with informality.

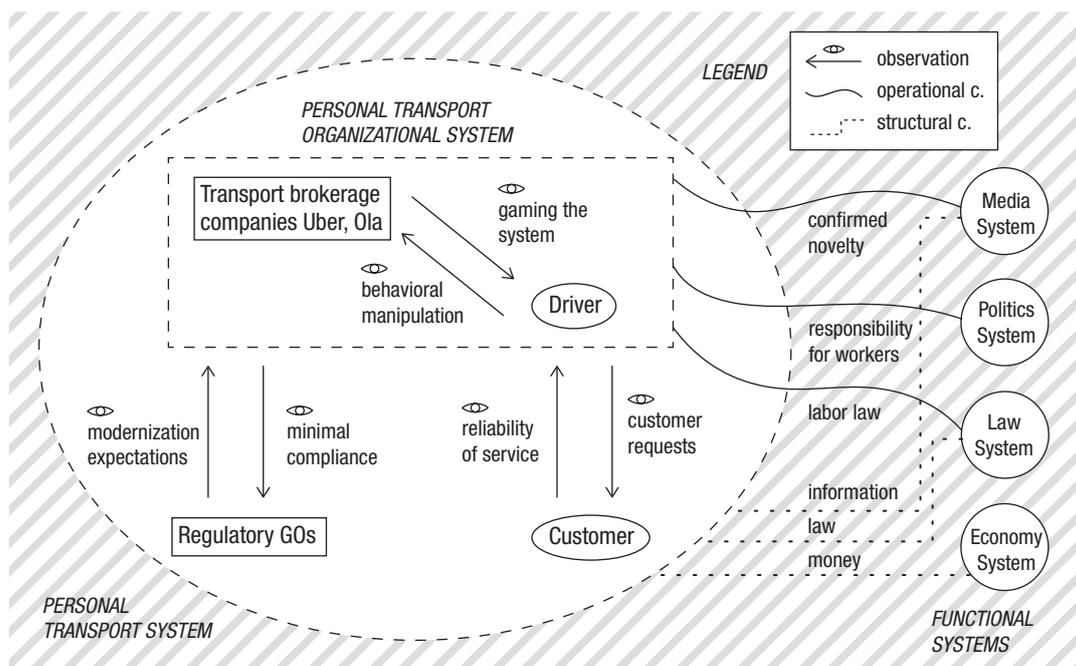


Diagram 12: Delhi (in)formal personal transport system

## **XIX. The Mumbai Slum Tourism System**

Mumbai is a city in Western India with significantly more than 10 million inhabitants, more than half of them living in slums (cf. Indian Ministry of Home Affairs 2001). In August 2017, the author of this work visited Dharavi, the biggest slum of Mumbai. This triangular patch of land, often termed as Asia's biggest slum (cf. Patel et al. 2010: 7) with estimations ranging from 300.000 to one million dwellers, has a particularly special location. Resulting from rapid urban growth towards north, the slum – formerly located at the city limit – was placed all of a sudden in Mumbai's center. Due to its long history, impressive size and unique location, Dharavi featured heavily in Indian and Western media. Particularly important in this regard is the controversy around a development plan, in which the area, occupied by slum settlements, was earmarked for mixed-use high-rises. In the course of the – eventually successful – resistance movement against the planned development, activist Sheela Patel designated Dharavi critically as “land of high returns” (cf. Patel et al. 2010: 13).

Dharavi also appeared in the Oscar-winning movie ‘Slumdog Millionaire’, which received polarized reactions. The UK geographer Peter Dyson, who carried out a study on slum tourism in Dharavi in 2012, notes that the movie presented ‘the slum’ to a fascinated Western audience, broaching the issue of determining, who is trusted to represent the lives of the urban poor. In slum tours, where tourists from industrialized countries look at live circumstances of slum dwellers, the contrast between rich and poor emerges even more, than in books or television. Consequently, most of the media reports tend to be constructed around the dualism of slum tours being either voyeuristic or non-voyeuristic (cf. Dyson 2012: 2). An important motivation for tourists visiting deprived neighborhoods abroad is a desire for authentic experience:

“Slum tours appear to present the perfect opportunity to experience otherwise inaccessible landscapes, see how people ‘really’ live and learn about the day-to-day challenges that face millions of people across the world.” (Dyson 2012: 1p)

Dyson is concerned with the politics of representation and interpretation. For his study on slum tourism, he conducted participatory observations of several tours, led semi-structured interviews with the tour company owners, tour guides and 16 slum residents, and collected data of 150 tour-goers with a questionnaire. His primary research question is about what tours show and what message they do construct, while also paying attention to the techniques used to convey this representation. He argues that whether a slum tour represents an accurate image of the place, is not as important as how and why tourists might perceive the representation as authentic (cf. Dyson 2012: 3p).

Similarly, the US sociologist Bob Ma carried out a study on slum tourism in Dharavi in 2010. Dyson and Ma both collected their data in cooperation with the slum tour company RTT (Reality Tours and Travel), which is dominating the market of commercialized slum tours in Dharavi. Ma focused on the tourist's travel motivations, which he tested with a questionnaire given to 193 tourists after they completed a three-hour walking tour of the Dharavi slum. Subsequently, he compared the survey data on motivational categories related to mass tourism such as curiosity, escape, ego-enhancement and learning. The questionnaire measured the degree of acceptability to questions such as “slum life seemed more authentic and unspoiled than modern city life” (cf. Ma 2010: 10). In an additional part of the questionnaire, the tourists indicated whether they would also pay to see homeless people back home with three quarters answering no. Ma attributes this to the tourists' perceptual differences between slum residents, which are seen positively as part of a cultural community, and homeless people in the West, which are perceived negatively as lazy or

addicted to drugs (cf. Ma 2010: 24).

Just like the tourists interviewed by Ma, the main motivation of the author of this work to visit Dharavi was also curiosity. In contrast with the experiences of Dyson and Ma, however, the author wandered through the slum not as participant of a tour, but as unguided observer. The personal observations of the author are intended to illustrate feelings like happiness, excitement, alienness or insecurity in the context of a slum tour. Excerpts of the related observation protocol are cited as thematic supplements and components of reflection. The following excerpt discusses the infrastructure situation of the visited residential part of Dharavi and its relation to the surrounding city:

“I see a potpourri of shrill colored houses in gradations of yellow, blue, pink and brown. Shreds of plastic lie on the street, it smells of urine. Bundles of power cables come from the houses and run overhead along the alley, a bustle of pipes protrudes from flushed out holes in the dirt road. People of all ages run, wheeze and hop around. In the distance, dominating the three-story shacks of Dharavi, I see glazed twenty-story high-rises with inscriptions like ‘BNP Paribas’.” (personal observation, 05 August 2017)

One of the most formative impressions of the author in his visit to Dharavi, was his feeling of being foreign and not belonging there. In the following excerpt, the author’s self-perception of being voyeuristic, and his feeling of unease are implicitly expressed. Here, it becomes clear that the author is not used to the described confined space conditions – the financial and educational distance between him and the dwellers is confronted with physical proximity.

“In the narrow side roads I often hug the wall to let others pass by. It is a very intimate feeling to participate that closely in the lives of the residents. Many of the buildings have no door but a curtain as separation towards the road. I see a woman doing laundry; she pours the suds over the doorstep. In passing, she is so close to me that I could touch her on the shoulder.” (personal observation, 05 August 2017)

About half of the tourists interviewed by Ma answered, that Dharavi was more positive than what they had previously expected. Ma points out, that this is consistent with the marketing model of RTT, which is based on transforming the ‘false’ Western image of slums by showing them the positive, community-driven spirit of Dharavi. To spur the curiosity of tourists, RTT focuses in their tours on the industrial sector of Dharavi, where waste is recycled and clothes for the world-market are produced. RTT’s portrayal of the slum, however, was questioned by some local slum dwellers, who were also interviewed in the study. These potters and business owners, who are working or living along the tour route mostly said, that the tour should show a larger part of Dharavi (cf. Ma 2010: 27). By selectively accentuating an aspect of slum life most people would find surprising, the tour company captures the attention and curiosity of tourists. This staged authenticity of the tours allows standardization and rationalization. Ma writes:

“In going to the tour three times, I found it striking that tour guides presented and explained every stop in exactly the same manner. Therefore, every tourist consumed the same image of workmen hammering away at tin cans or cutting bars of soap, as if these workmen were part of a living museum.” (Ma 2010: 38)

Ma comes to the conclusion, that the surveyed tourists accepted the authenticity that was presented to them – even though the selective tour communication showed the slum in a completely positive manner, leaving out unpleasant but very visible components, as for example the problematic working conditions in the recycling industry (cf. Ma 2010: 36). While the tourists predominantly reported positive feelings, the slum residents felt ambiguous towards the tours. Residents

said that they did not understand who the tourists are or what they are interested in; they want to interact directly with them and are unhappy about the tourists just stopping and looking (cf. Ma 2012: 29-34).

The author of this thesis also perceived feelings of excitement and happiness during his unguided stroll through the slum. However, these positive emotions were also accompanied by a self-perceived voyeurism; the feeling of being an intruder. Due to the lack of an intermediary tour guide, which would have probably moderated and filtered communication with slum residents, the author performed many interactions with local dwellers, such as buying food, asking the way, or chatting with curious old men and children.

“Many dwellers smile or wave, some frown at me. When I raise my hand to greet or when I tip my cap, I often get back an upbeat ‘hi’. [...] I feel happy and positively surprised of the persons’ reactions, which lives I have invaded quite inconsiderately.” (personal observation, 05 August 2017)

This social exposure, however, was accompanied by uncertainty how to behave and which role to take. Arguably, this uncertainty was also perceived by others, since a resident felt obliged to intervene and ask about the author’s condition.

“Several boys with ages ranging from about 6 to 12 years come to me and ask many questions. One requests me to rap. I say: ‘No, I can’t do that.’ I smile a lot, but also try to show authority by my posture. A passing man in his mid-thirties with a black beard shouts out to the boys in Hindi. Then he asks me in English if I am ok and whether the children annoy me.” (personal observation, 05 August 2017)

According to Ma, the tour operators face the inherent paradox of slum tourism: they cannot preserve the characteristic environment and, at the same time, benefit the host population (what is normally considered as characteristics of ‘moral’ tourism). Though RTT runs a charitable organization financed from revenues of its tours, ironically, the extent of the charities’ improvements of local living conditions has to be limited. Otherwise, RTT would destroy the particular tourism habitat on which it relies (cf. Ma 2010: 38p). Following Dyson, the entire slum is constructed as ‘backstage’ landscape in relation to the ‘frontstage’ of Mumbai’s official tourist sites. The guides provide a ‘pre-tour briefing’ and frame the slum dwellers as “normal people with normal problems just like anyone else” (cf. Dyson 2012: 8-12). He concludes, that the information provided in the RTT Dharavi tour constructs an idealized ‘reality’ – a fact which is veiled by the tour-guides in acting as seemingly non-staged representatives of the slum (cf. Dyson 2012: 18). By constructing the tour as transformative experience, and convincing the tourists of a certain viewpoint on Dharavi, the tour guides position themselves as link between dwellers and tourists – as gatekeepers of reality.

Based on the author’s observations and the studies of Dyson and Ma, it could be argued that the described amount of mixed feelings, which the author experienced, is not what slum tourists really desire. To have an interesting, but not overwhelmingly strange tour, and to avoid unpleasant situations, a guided tour is the method of choice. In the framework of an essentially meta-interaction system where communication not *with* but *about* takes place, tourists can handle the exceptional situation of being in a slum by objectification. Impressions are filtered and pre-interpreted by a guide, who provides an interpretative pattern, and communicatively frames experiences. For example, guides construct the narrative of slum dwellers being normal people with normal problems, or that they are particularly industrious and happy. Without a guide, tourists may not arrive at the same conclusion.

However, the guides of RTT process the ‘reality’ of slum not only in relation to an envisaged transformation of a ‘false’ Western image of slum, but also in relation to rationalization. This is necessary for an effective and replicative tour procedure. Among other things, this characteristic can be seen in consistent routes and standardized descriptions, offered by the tour guides – pithily described by Ma as ‘living museum’. The rationalization is also observable in the dramatic composition of the commercial tours. That comprises a pre-briefing (where some of the desired interpretations are anticipated by the guides), and the focusing on selected aspects of Dharavi (which the guides expect to be the most interesting ones to tourists). Probably, the scant interaction of tourists with dwellers in tours, reported by Ma, originates in the specific set-up of the tours. Here, direct communication is hampered by a setting comparable to a zoo, constructed to minimize tourists’ feelings of insecurity. Another attempt at explanation is, that tourists are reluctant to talk with dwellers, because they are unsure whether an increase in interaction compares to a more voyeuristic stance.

The psychic systems of tourists observe the guide communication to learn about the phenomenon slum. The guide(s), in turn, observe slum communication emitted by dwellers to select pieces of information, which are deemed useful for the purpose of their organization system. Also, they observe the tourists to anticipate experiences, which may be received favorably by them. Most of this meta-interaction process happens on the basis of the dweller’s day-to-day communication – a fact they are aware of, but do not necessarily understand. Therefore, the dwellers try to include the guides and the obviously foreign persons, which walk through their neighborhood, in their own frames of reference.

In the slum tour interaction system, three significant actors can be modeled – the tourists, the guide(s) and the dwellers. Observable communication can be viewed as mainly differentiated along the dichotomy of authentic/non-authentic. Also, several indirect operational couplings to functional social systems exist. For example, the educational system is docked with its code knowingly/unknowingly, being processed via didactic mediation and carried out by tour guides. The economy system provides its processing capability regarding paying/non-paying via the detour of the tourist’s experience being rationalized, and the media system is integrated due to the fact that slum tours encompass irritation, and therefore comprise an updating of information.

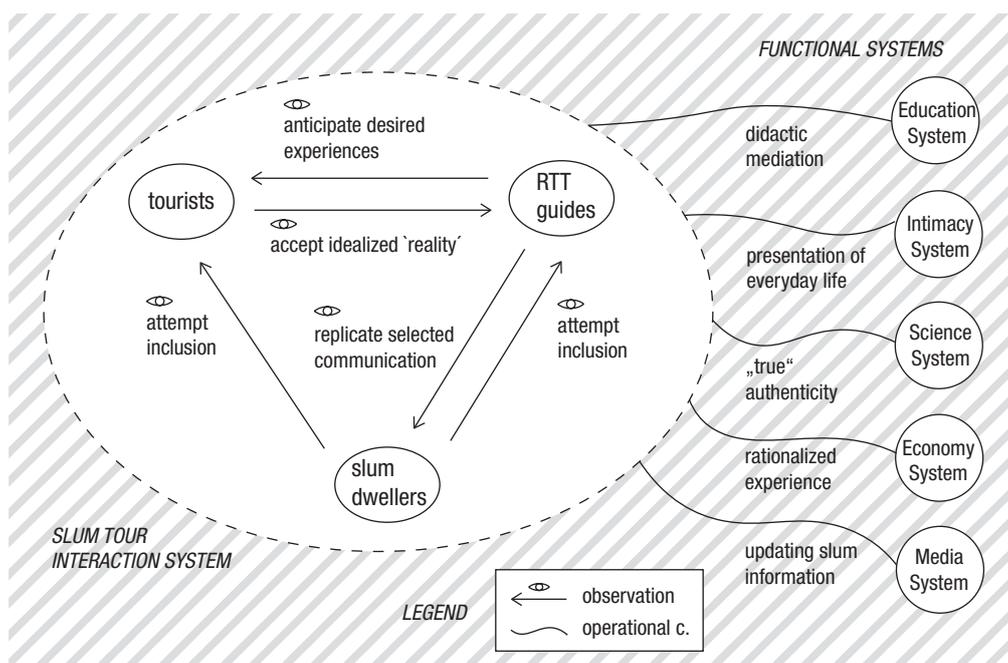


Diagram 13: Mumbai slum tourism system

## **CONCLUSION**

### **XX. Results**

The main goal of this work was to give an overview of the sociological phenomenon of slum from a systemic-communicative point of view. Here, the explorative use of the term of *form*, which enables heterogeneous observations of manifold empirical communication, constituted an important conceptual focus. In the open qualitative research process, curiosity proved to be the driving force. Data on various forms of slum communication was collected, sorted, evaluated, and combined with present slum and informality research, centered on Indian megacities. Here, emphasis was placed on the textual and visual modeling of three empiric phenomena, described in the Systems Theory framework. In the following paragraphs, the key results of this work are recapitulated. This also includes a reflection on the difficulties faced in the research process due to the use of conceptual methods derived from the Systems Theory. In a subsequent paragraph, the empiric and methodic results are discussed and interpreted. This is done in regards to future application cases, where complex socio-spatial communication processes could possibly be analyzed with systemic concepts by different fields of research.

In the Pune slum mapping organizational system and the interconnected Pune interaction system of spatial transformation, the observations of two planning-related NGOs, a community-based organization and a governmental organization were depicted. Here, the author argues, that with NGO's getting involved in the city's spatial transformation interaction system, the formation of a mapping/measuring subsystem took place. In its intermediary position of spatial interpretation, this subsystem applies both the detecting form (slum/not-slum) and the spatial form (action/in-action). This is mainly possible due to the external expertise of the science system, and arguably also the education system, which process spatial communication in a different way than the political, economy and law system.

In the Delhi informal rickshaw interaction system, and the related Delhi semi-formal personal transport interaction system (with its included transport brokerage organizational system), the observations of customers, drivers, regulatory GOs and transport brokerage companies were shown. The examined communication was analyzed by applying the formal form (formal/informal). Based on the delineated facts, the author concludes, that the ostensibly formal transport brokerage organizational system mirrors the practices of the informal rickshaw interaction system. Among others, the ride-hailing companies Uber and Ola reproduce the informal relationship of rickshaw drivers to the public authorities. In a cunning double-bind communication strategy, however, they also convey formality – carefully matched to suit the respective recipient.

In the Mumbai slum tour interaction system, the mutual observations of tourists, tour guides and slum dwellers were modeled – led by the imaginary form and its differentiation between authentic and non-authentic communication. The author argues, that the tours organized by the company *Reality Tours and Travel* are constructed to limit direct, non-staged interactions between tourists and slum residents. Instead, tour guides filter and pre-interpret 'raw' impressions. RTT's slum tours are designed to be transformative, educational experiences. However, in this rationalized and replicative process, only a selected part of Dharavi is shown – but claimed to be 'authentic' and representative for the whole.

All of the examined systems deal with slum- or informality-related phenomena in India. Apart from this commonality however, only limited substantial generalizations can be made. Having said this, on the methodical level, nevertheless some insights have been gained. During the research process, it became increasingly clear to the author that the Systems Theory has a good

applicability in qualitative social research. In its agnostic fashion – based on the concept of contingency – the theory offers a versatile conceptual framework. However, by applying the theory on practical events, the author became aware of some strengths and weaknesses associated to this approach.

In the research process, the question rose how to deal with different levels of granularity – and how to choose which resolution is the most useful for which purpose. In putting the three applied cases of this work into context, it can be noted, that they are located rather on the “micro-level”, since they heavily draw upon interaction systems and prominently feature actors. Though the question of granularity is not restricted specifically to the field of Systems Theory methodology, dealing with a fine resolution in this methodical framework nevertheless poses some peculiar difficulties. An example is the usage of communication emitted by human individuals (psychic systems) in interview settings, and the classification of this communication. In a more precise research process than this one, interviews would have had to be treated as separate interaction systems, which are in a mutual observation with previous interviews, the current state of research and the macrosocial context. In the view of the author, this approach, however, would constitute a severe limitation to most research projects, which depend on carrying out a large number of interviews.

Another challenge of the present work was the creation of diagrams in accordance with the theory’s foundations. In order to achieve this, several present sociological diagrammatic presentation methods were reviewed. Based on this, a first draft of a new diagrammatic representation form, aligned with the requisites of the Systems Theory, has been developed and applied on several social phenomena. In this method, the importance of observation relations is emphasized with an eye, which symbolizes the mutual adaption of observing systems. This is a concept which is distinct from flow schemes, which are commonly not able to handle the concept of observation in the sense of the Systems Theory. With its usage of consistent terminological and diagrammatic conventions in presentation, the diagrammatic representation form delineated in this work aims at enabling the creation of typologies of social phenomena. In essence, this is an attempt to confer the spirit of the Energy Systems Language – its highly standardized and versatile semantics – into the Systems Theory. However, in its present state, the diagrammatic representation form is far from complete. Particularly the handling of theoretic blanks as correctly as possible constitutes a demanding task due to the conceptual scope and complexity of the topic. In this regard, especially the diagrammatic presentation of the theory-wise challenging mechanisms of structural and operational couplings would benefit from further refinement.

## **XXI. Discussion**

At this point, ideas about further possible applications of a reflective socio-systemic methodology for purposes beyond research are considered. For example, an interesting approach would be to couple space with the Systems Theory’s concept of communication. This could happen in an artistic context with the goal of drawing attention to the processing of social communication in a visually appealing way. Communicative relations not necessarily have to be depicted in two-dimensional line graphics. They are also thinkable in other ways, as for example a multi-dimensional vector space. With the present level of technological development, it is conceivable to utilize visual recording devices as for example a camera, space telescope, near-infrared projector, scanning electron microscope, or Lidar, to automatically generate data on the movement of bodies in space. An implementation of this idea may resemble the automatic data logging procedures, which are carried out by the worldwide network of meteorological stations. With such a setup,

the actual multitude of mutual observations and couplings, concerned with space on almost any scale, could be parsed and displayed in a more fine-grained resolution, than in the present case of static diagrams. However, in the view of the author, a precise implementation of this idea is rather unlikely. This is due to pragmatic reasons – how exactly the data is selected, collected and input, how the model is built to simulate autopoiesis, how it deals with its observational blind spot. With a less rigorous mindset, though, the idea of such a socio-spatial interface could still be worthwhile pursuing.

On the other hand, a potential usage of the Systems Theory in a present-day planning context can be seen in the concept of the spatial form. Due to the form's quality of influencing the interpretation of a topic – by framing it with the specific differentiation of action/inaction – the spatial form is conceivable as tool in various planning contexts. For example, this form could be applied on difficult city areas to structure problems, and reduce complexity by facilitating the visualization of multi-stakeholder interests. Thereby, this form could contribute to a more integrative urban planning practice. Here, the systemic concept of autopoiesis may be utilized to lead away from a practice centered on interventionism, where spatial problems are first construed, then analyzed and eventually solved. Instead, planning could be perceived as a more reactive and flexible approach, which rather resembles the work content of street sweepers or gardeners. In this understanding, planning is a somewhat ubiquitous task with the goal of overall functioning spatial processes in mind. Geared towards the fulfillment of collaboratively conceived performance indicators, the urban fabric is adapted and developed in incremental steps.

To enable such a development, where not only high-profile, but also deprived people have access to and influence on the planning system, not only conceptual groundwork would need to be done – the development of an easy-to-use interface aimed at 'real-world' applicability would be even more important. With a communicative mediator, which does not limit itself to the science system – for example a digestible and concise brochure, tied to the thematic area of construction – connectivity regarding socio-spatial issues with other systems could arguably be enhanced. This kind of medium would draw from the media system, and probably also from the education system, with the defined goal of creating a bridge between very different spatial actors – be it motorists, PV module manufacturers, national standardization bodies, esthetes, real estate developers or low-income dwellers. From a policy point of view, this endeavor could also be denoted as lobbyism. However, it would ideally take the shape of an inclusive lobbyism, aimed at creating public awareness for spatial interpretation processes, based on mutually communicative perception.

In conclusion, it can be noted that the Systems Theory is a highly relevant and powerful conceptual tool for the analysis of societal issues of any scale. The key component for this is the theory's embrace of contingency, which enables it to process and contextualize all kinds of communication. The theory's usefulness can be seen paradigmatically on its handling of difficult phenomena, as for example rapidly growing megacities or slums. These urban development questions are intertwined with a whole host of further challenges: a steadily rising global population, an increasingly multipolar world order, pressures arising from inequality, environmental degradation resulting from global warming, and more. Considering these societal issues, where complexity is an inherent property, the importance of understanding social phenomena becomes more and more important. In this respect, the author hopes to have made a meaningful contribution to the field of sociological Systems Theory methodology with a thematic focus on Indian megacities. Likewise, others are encouraged to join in the endeavor of further exploring and promoting systemic, spatially-oriented thinking.

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