



The ideological justifications of the Smart City of Hamburg

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ABSTRACT

This article analyzes rhetoric as a mean of ideology reproduction on the base of digital public rhetoric of Hamburg's government on smart city agenda. With the aim to grasp ideology behind the technological optimist rhetoric about smart city and research its effects and functions, an interpretative analysis of empty signifiers was conducted. Interpretations of Horkheimer and Adorno, Žižek and Lacan serve as background for the research, which are introduced to enrich an existing (mainly Foucauldian) set of smart city critique. Inspired by critical theory, this analysis shows that ideology is reproduced by culture industry and indicates tendencies to implement instrumental reason, to harmonize the existing social and economic contradictions and mainly reproduces economic interests. Since the researched rhetors are as politicians in power to materialize their ideological convictions, the mystification of technology plays a crucial role as disciplining and controlling measure, which aims to stabilize and justify status quo and maintain the existing inequalities. Derived rhetoric elements, which indicate categorization of citizenship and reductionism of environmental issues demonstrate the high societal relevance of the study and emphasize the urgent need for critique on progressing urban digitalization.

1. Introduction

A strong positive connotation is attached to the notion of smart city (SC), expressed in both political rhetoric (Scholz, 2016a, 2016b, 2016c; Horch, 2014; Johnson, 2016) and academic discourse (Glasmeyer & Christopherson, 2015). Urban planners are widely encouraged to implement smart solutions for strengthening global city competition, improving ecological and economic efficiency, and facilitating resilience (Albino, Berardi, & Dangelico, 2015). In such technologically optimist discourses on SC, urban digitalization is often compared with electrification (Hatch, 2012), which underlines the evolutionary nature of technological advancement and its impact on urban planning. And yet, the formation of urban spaces cannot be naturalized in terms of evolution, but, instead, takes place in a societal context of structural transformations and power relations (Harvey, 1975). In a contemporary context of (global) informational capitalism and neoliberal hegemony, urban spaces are typically framed by consumption patterns and the ubiquitous fetish of capital accumulation (Bodnar, 2015). The reification of the city and its public services requires the development of measures and tools which increase efficiency and security of urban performance. SC meets these requirements and functions as a reproductive and stabilizing measure for status quo, which is justified by technological optimist rhetoric.

The aim of this paper is to expose the ideology behind the technological optimist rhetoric about SC, its formation, functions and impacts on urban planning by analyzing public speeches and statements of governing local politicians in Hamburg. The main research question is: How does optimism towards smartification reproduce and manifest an ideology of late capitalism in case of public rhetoric of Hamburg's officials? The research contributes to disclosure of taken for granted self-reproducing societal forms, structures and contradictions, critique of which depicts their intrinsic normative force. Moreover, this kind of research is innovative in the field of critical urban studies, since an ideology analysis method in combination with critical theory and psychoanalytic elements have not been applied to the smart city concept yet. The discussion of the interrelationship of SC and instrumental reason appears particularly urgent, since overreliance on reason and mystification of technology can result in discrimination of and violence against social groups (Horkheimer & Adorno, 1944/2006). Hence, the knowledge gained through ideology analysis enriches the critique of the smart city concept, as well as a general understanding of it.

In order to grasp the interrelations between technological optimist rhetoric, neoliberal ideology and capitalism, public rhetoric of the SC-Hamburg is analyzed through the lens of critical theory (Horkheimer & Adorno, 1944/2006) and psychoanalysis (Žižek, 2006). In recent years, critical enquiry into smart cities have typically been informed by

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Foucauldian perspectives, which identify the smart city as a disciplinary strategy, a manifestation of algorithmic governmentality, marked by high degrees of surveillance (Vanolo, 2013; Wang, 2017). We seek to complement such studies with an ideology analysis method informed by critical theory and psychoanalytic elements, thereby adding conceptual repertoire to critical urban studies. In the next section, we discuss our critical theoretical approach to the SC concept.

The case study is built up as follows: First, we present the theoretical conceptions and resulting research method in *Methodology*. Thereafter, an overview of empirical findings is given in *Results*, which are subsequently interpreted in context of the chosen theoretical framework in *Discussion*. The conclusion gives an overview of the main arguments as well as their placement within current SC-research.

Methodology

1.1. Theoretical framework: SC, ideology & rhetoric

In academic discourses the SC concept is discussed as an umbrella term for multiple digital innovations in urban development. Caragliu, Del Bo & Nijkamp (2011: 6) define SC in a most comprehensive way, namely, as an urban space that is characterized by investments in human and social capital as well as in traditional (transport) and modern communication infrastructures (ICT) that are designed for fueling sustainable economic growth and a high quality of life, marked by rational management of natural resources and participatory governance. A differentiation between SC 1.0 and 2.0 was conducted in further steps of concept development: With SC 2.0. explicit attention to the public needs and values was added to the technological and entrepreneurial focus of SC 1.0. through an emphasis on democratic bottom-up perspectives (Trencher, 2019). Recently the concept of SC was complemented with the attribute of sustainability according to the anthropocene discourse in order to address the urgency of climate crisis. From this perspective, SC must become a coherent strategy, which reaches ecological gains and changes the social mentality towards “post-Anthropocentric future”, meaning the one which enables a sustainable cohabitation of flora and fauna (Yigitcanlar, 2018).

However constituent realizations of smart solutions depend on the particular institutional contexts of urban planning in existing cities (Haarstad, 2017). In order to generalize the understanding and evaluation of SC peculiarities different quantifications methods were developed (Garau & Pavan, 2018; Huovila, Bosch, & Airaksinen, 2019). For our part, we see such scientific reduction of a city and the citizenship dynamic structures along with their unique historical, economic and social contexts to countable entity as an integral part of SC-ideology production. Further smart solutions are criticized for their superficiality and short-term nature (Kitchin, 2017); their centralized development and exclusive use of smart tools (Hollands, 2008; Kitchin, 2017); their market-orientation of SC policies (Haarstad, 2017); their risks of data leakages (Hatch, 2012); their limited impact on ecological sustainability through high energy consumption of SC (Hollands, 2008; Yigitcanlar, 2018); lacking development of stakeholder cooperation and post-androcentric mentality (Yigitcanlar, 2018). Despite the structural critique the implementation of smart technologies is a global trend in urban planning, which is supported by the research – a trend, as we claim, that is grounded in unquestioned ideological convictions.

From the perspective of critical theory SC can be understood as a tool of nature mastering in line with Enlightenment project. Horkheimer & Adorno, 1944/2006 argue that in order to emancipate humans from myths, Enlightenment developed a belief in possible mastery of nature by the human originating from holistic approach to science. Resulting exclusion of unquantifiable thought from SC-discourse (e.g. philosophy & ethics) enables an overreliance on *instrumental reason*: Reason becomes unquestionable and naturalized technology, which limits or even eliminates the reflection of developed instruments. Contemporary research (Krüger, 2013) shows that mastering of nature manifested itself as impossible. Thereafter the

discursive focus shifted to eco-modernist approach, which pleads for technological control of unintentional negative consequences, reflexive technology use and discursive resolution of the contradiction between ecology and economy. These trends can be also observed within discourse on smartification (Kong & Woods, 2018).

Mystification of technology and resulting technocratic approach to societal issues are justified with the notion of progress and innovation for the sake of individual liberation. However, authors point out that this process is bound to the target of profit maximization, which results in destruction of the individuals, natural resources, of critique and strive for empowerment (Horkheimer & Adorno, 1944/2006). In this context, the sphere of politics becomes reduced to strive for vote maximization, in course of which the politicians do not enforce their own or the voter's interest but rather focus on attractiveness of their performances (Steinert, 1999). This characterizes political decision-making as a form of culture industry, which alienates policy from policy-makers and the voters, demands voter's conformity, reduces the voters to a countable entity and mitigates political conflicts. Accordingly, the beliefs in instrumental reason and prolongation of these through production sphere constitute as justification for the status quo (Adorno, 1954), letting no space for criticism or empowerment of the human.

This ideological structure can be grasped through analysis of rhetoric (Foss, 2009). Hillier and Gunder (2005) argue that use of language as a cultural activity builds upon the subjects longing for pre-ideal harmony and attempt to describe the uncertain and inconsistent real. The Real is understood here as an undefinable dimension outside the symbolic order (Hillier & Gunder, 2005). However, the self and the environment cannot be completely comprised by the language what produces multiplicity of linguistic signifiers. The interpretation of these signifiers constitutes individual beliefs, normative behaviors, cultural imperatives and desires (Hillier & Gunder, 2005), whereby collectively shared interpretation of signifiers constitutes ideology. Žižek (1994) adds to this understanding of ideology a Marxist perspective: Ideology is a practice (García & Sanchez, 2016), happening within the dialectics of the subject's desire for materialization and the reverse ideological influence of the materialized desire. Žižek (1994) also differentiates between ideology *in itself* (as a set of ideas, concealing the production conditions); ideology *for itself* (individual set of desires and interpretation of the Real); and ideology *in and for itself* (operation of social practices).

In the neoliberal age master signifiers become undefined (Žižek, 2006), challenging the subjects to construct their identities and ideology (Gunder, 2010). The re-interpretation procedures are connected to enjoyment of harmony and fullness construction, which confer technological solutions as SC the sense of security and salvation (Vanolo, 2013). To enhance identification with SC public rhetoric uses ideological symbols (e.g. sustainability, innovation, efficiency) and master discourse, which affects knowledge production through certainty and lack of explanatory content (Hillier & Gunder, 2005). However, the feeling of uncontested betterments contributes to the maintenance of the political, societal, ecological and economic status quo since it does not explicitly aim structural change of urban life (Žižek, 2006).

1.2. Empirical approach & conceptualization

To analyze SC as an ideological construct – an ideological construct that justifies the implementation of smart solutions in existing cities – we focus on smart city rhetoric as a way of transferring ideology. We analyze an illustrative SC case (Hamburg). In our analysis, we trace, in line with critical theory, SC as an ideological construct to material inequalities, repressed desires and shortcomings of instrumental reason.

As argued before, SC-concept implementation is highly dependent on its institutional context. Therefore, a case study was conducted. Findings of such study represent the general justification trends for SC-

development if the selected case exhibits successful smartification: Due to the inter-city location competition (e.g. Global City by [Sassen, 2007](#)), which includes the exchange of governance strategies and technical innovation, as well as experimental character of smart tools a successful SC acts simultaneously as a competitor and a role model for the other cities. In other words - effective branding and economic progress of positive examples of SC encourage other cities to become smart. This character of fruitful smartification constitutes the main selection criterion for the analyzed case - SC Hamburg.

The city of Hamburg is one of the prominent cities of Europe that promotes itself as a SC ([Gabrys, 2014](#)). Hamburg is the cultural and economic center of Northern Germany, which constitutes the second biggest German city and exhibits a high GDP ([Statistikportal der Metropolregion Hamburg, 2016](#)). The city and surrounding rural areas make up a separate federal state thus urban policies have a federal character ([Vogelpohl & Buchholz, 2017](#)). According to the IESE Cities in Motion Index (CIMI) Hamburg is officially the 31st SC in the world, and the second SC in Germany. This and the fact, that Hamburg is referred to as “one of the smartest and most livable cities” ([Spil, Effing & Kwast, 2017](#)) give it a prominence of a positively connoted or successful SC and therefore a role model characteristic. Hamburg's international importance is also given since the city constitutes a nodal point for shipping industry, which like its competitors tries to approach economic and ecological sustainability issues ([Bräuninger, Otto, & Stiller, 2010](#)). Therefore, Hamburg's justification of smartification can indicate international trends in SC-ideology constitution.

In general, SC Hamburg has heavily invested in ICT (e.g. Smart Port, MIT Media Lab, etc.), but also in social capital (e.g. introduction of educational programs, broadcast of lessons for children suffering from cancer, etc.), which are connected to participatory elements (e.g., smarticipate, finding places, etc.) and environmental issues (e.g. car sharing system, monitoring of immission data, etc.) ([MLOVE ConFestival UG, Hamburg, 2016](#)). This comprehensive orientation makes Hamburg as a self-promoted SC compatible with the comprehensive SC definition of [Caragliu et al. \(2011\)](#). Since 2013, Hamburg's government and Cisco Systems Inc. cooperate in a series of pilot projects ([Scholz, 2014a, 2014b](#)). Additionally, Hamburg supports the development of SC startups and entrepreneurship ([Scholz, 2016a](#)). The SC of Hamburg consists of multiple innovative smart solutions projects, which are coordinated centrally by a governmental administration. Due to these coordinating and structural functions of Hamburg's government, our data collection focuses on digital public rhetoric, which refers to authorship of Hamburg's officials and their spokespersons. The selected documents and speeches have a political character, managerial articles were not considered. Hamburg offers a transparent database of speeches, statements and booklets, which are affordable for rhetoric analysis. We begin our data collection with searching for speeches, press releases and brochures, which contain the term “smart city”. The selection of the sources is limited by a time frame between 2013, when the first SC tools were introduced, and 2018, to date, that also marks the shift of leadership, when the social democratic mayor Olaf Scholz was appointed as finance minister of Germany. Further, texts which contain less than four paragraphs are excluded because these contain only introductory information for further statements and releases (e.g. [Meinecke, 2014c](#)). The data is derived by the search function of the official page of city of Hamburg. Data collection has resulted in 22 textual sources, which include seven speeches (See [Appendix I, Table 2](#)), 14 official press-releases (See [Appendix I, Table 1](#)) and two booklets (See [Appendix I, Table 3](#)). We believe that this scope of data enables a detailed analysis of major rhetorical elements and their interrelationships.

To analyze rhetoric and its interrelation with ideology, [Foss's \(2009\)](#) rhetoric analysis approach was chosen, which consists of four steps: “1) identifying the presented elements of the artifact; 2) identifying the suggested elements linked to the presented elements; 3) formulating an ideology; and 4) identifying the functions served by the ideology” ([Foss,](#)

[2009: 214](#)). Following [Foss's](#) approach, we analyze textual data by identifying “major arguments, types of evidence, images, particular terms, or metaphors” ([Foss, 2009: 214](#)) – presented elements -, which justify the SC innovations in Hamburg, since these transfer ideological beliefs. To structure the findings, the identified elements are attached to categories political issues, objectives and means ([Maynard, 2017](#)). [Horkheimer & Adorno, \(1944/2006\)](#) indicate that instrumental reason and culture industry expose human and nature to objectification, which can result in violence and exploitation. Hence, we searched for the notions of society and nature used by the rhetors and considered them as additional categories. Further, the found elements (e.g. “Progress through technology”, [Scholz, 2014a: 2](#)) are interpreted in terms of suggested or operationalized elements, which are derived from critical theory ([Appendix II](#)). The main suggested elements are culture industry, which is coded as objectification of voters and displacement of political goals towards economic profit, and instrumental reason, which is defined as mystification of technology. This step results in interpretations of ideological structures, which constitute SC-justification and affirm smartification. These isolated interpretations are then set into relation, to the point that they suggest a draft of coherent ideology of Hamburg's officials. This interpretative step enables an analysis of the functions of SC Hamburg as an ideological construct – a construct that is mediated through Hamburg's smart solutions rhetoric. The analysis of SC Hamburg as an ideological construct contains indications for rhetoric-based ideology reproduction mechanisms.

2. Results: SC of Hamburg as issue and solution

Following overview presents rhetorical elements, which are used by Hamburg's officials and their spokespersons to justify the implementation of smart solutions. During the careful reading of the sources of public rhetoric, the main justification elements of SC of Hamburg are collected. Thereafter, they are categorized as suggested by [Maynard \(2017\)](#), to the motives concerned with political issues, goals and means. The transferred notion of nature is bound to these categories and therefore was not discussed isolated. The notion of society is processed separately. In sum, rhetors justify SC-policies by articulating such issues as structural market and innovation changes and population growth. Here, digitalization is presented as political means and as end simultaneously, since it imposes pressure on Hamburg's officials and also facilitates the achievement of economic and environmental sustainability and designing a livable future. In this context society is perceived as a unit which would profit from digitization processes and which is responsible for its development.

The key issues of the rhetorics are competitiveness (“Modern cities, like companies, are in competition with one another” in [Meinecke, 2014a](#)) and awareness about structural changes (“One should begin and learn from the collapses” in [Scholz, 2016a](#)). These two motives are both connected to digitalization (“collection and assessment of emissions data” in [Meinecke, 2014b](#)) and increasing urbanization (“cities will account for nearly 90 % of global population growth” in [MLOVE ConFestival UG, Hamburg, 2016: 1](#)). Digital public rhetoric presents digitalization in two ways: as a continuation of local tradition by “Connecting social and technological progress” ([Horch, 2014: 1](#)) but also as a natural upheaval, such as “tsunami” ([Scholz, 2016a](#)), to which “power and dynamics of development speed” ([Scholz, 2016a](#)) are attached. The trend of increasing urbanization is described in similar way, as an opportunity for creative city development ([Scholz, 2016a](#)) and as an issue of dominant growth (“cities will account for nearly 90% of global population growth” in [MLOVE ConFestival UG, Hamburg, 2016: 1](#)). The latter is partly associated with needed environmental awareness (“necessity for CO₂- cutbacks” in [Bezirksamt Bergedorf, 2017: 5](#)).

The political means that are frequently mentioned by officials are indispensable implementation of technology (“control of typical city processes” in [Scholz, 2014b: 2](#); “Smart Cities are the future” in [Schmoll,](#)

2017), interconnection of inner-city processes (“connectedness of people, objects and processes” in Horch, 2014: 1), education (Scholz, 2016a) and implementation of managerial solution-finding (“it will be essential to adjust to new circumstances in an intelligent way: Take the port here in Hamburg.” in Scholz, 2014b). The mayor and the spokespersons of the local government describe innovative projects as “evolutionary developments” (Scholz, 2016a), “revolution with comfort” (Rothwell, 2014) or “progress through technology” (Scholz, 2016a). To handle climate crisis officials suggested adaptive measures, increase of clean energy use and an emphasis on smart mobility (MLOVE ConFestival UG, Hamburg, 2016).

Several objectives are derived from the public rhetoric of SC of Hamburg: environmental (“development of alternative energy sources is of existential importance” in Bezirksamt Bergedorf, 2017: 6) and economic sustainability (“politics are actively involved and have the task to construct the context” in Krstanoski, 2013); following the tradition to secure Hamburg’s competitive status (“seize its pioneering position as role model for other cities” in Offen, 2015; “we are being the driven, who have to adapt foreign ideas to have any chance at all to survive” in Scholz, 2016a); and design of a livable future (“modern city” in Meinecke, 2014a; “livable future” in Meinecke, 2014a; “future prosperity” in Horch, 2014: 2; “creating conditions for development of digital economy”, Scholz, 2016a). As argued by Scholz (2016b), the implication of SC projects would positively affect transparency, information access, easiness of communication and participation. In the field of environmental policy-making, the speaker of Authority for Environment and Energy name such goals as resource management, waste management, adjustments to climate change and efficient buildings (Behörde für Umwelt und Energie, 2015).

Concerning the notion of Society, the mayor Scholz and senator Horch present citizenship as a unit which would profit from digitization processes of public space and services (Scholz, 2016a), which is responsible for its development (“Progress through technology – this is the perspective which is required from the citizens” in Scholz, 2014a: 2; “working together for our future” in Scholz, 2014a: 2) and which should leave aside its pessimism about digital change (“I believe that this view and its intrinsic pessimism is utterly wrong” in Scholz, 2016a). The pronoun “we”, which indicates the boundary of the notion of society, comprised representatives of “public administration, research, academia, and development, as well as local and international industry” (Horch, 2014: 1). Scholz (2016a, 2016b, 2016c) uses two striking metaphors in context of society: in one speech Scholz (2016a) underlines that educational programs also include the refugees, who “will stay”; according to him the digitalization requires “social transformation” (Scholz, 2016a).

Participative policies also give guidance about the notion of society transferred by Hamburg’s officials. The mayor and the spokespersons introduce following participative elements of SC agenda: “smarticipate”, as an open access tool analyzing the effects of technological innovation (Scholz, 2016a); new quality of democratic participation through access to city data (Scholz, 2016a); ELBE+, which interconnects the geo-data (Kutz, 2016); Finding places project – open access overview over building sites (Scholz, 2016a).

3. Discussion: towards a critique of SC ideology

In the following section we discuss the signifiers derived from public rhetoric of Hamburg’s officials in terms of critical theory in order to deal out structural criticism of the SC-ideology. First, we show that analyzed public rhetoric contains arguments and metaphors which are suggested by the theoretical literature. These arguments are structured alongside the three main motives: SC and technology, economization of spatial planning and notion of society. The second step of the analysis is the juxtaposition of the central rhetorical arguments and the actual SC-materialization. In the last step, we discuss possible functions of the portrayed SC-ideology.

The findings signalize the suitability of concept-operationalization and the theoretical framework, which can be further used for the further research: As an ideological complex, SC Hamburg mystifies technology by attributing to it such signifiers as innovation (MLOVE ConFestival UG, Hamburg, 2016; Scholz, 2014a; Scholz, 2016a; Scholz, 2016b) or solutions (Rothwell, 2014; Scholz, 2016a). The introduced smart tools aim to estimate (Albrecht, 2017) and control (Meinecke, 2016a) urban activities to optimize (Rothwell, 2014) their functioning. Also, such codes as profit (Meinecke, 2016b), progress (Scholz, 2014a), economy (Scholz, 2016a), competitiveness (Rothwell, 2014), industry (Meinecke, 2016a), production (Bezirksamt Bergedorf, 2017) and offer (Meinecke, 2014b) have been detected. Elements of culture industry are found in political rhetoric 2. The notion of community was not used by politicians or their spokespersons. They conceptualize the addresses of the policies in the following way: The pronoun we (Krstanoski, 2013) was associated with all city dwellers, in which interest the politicians implements urban digitalization (Scholz, 2014a). The spokespersons mention “our responsibility” (Meinecke, 2016a), which is meant as responsibility of the citizens for city development. The mentioned citizens are often associated with universities (Albrecht, 2017), creativity (Dube, 2015), business (Scholz, 2016a) and industrial production (Meinecke, 2016b).

Throughout the analyzed public rhetoric elements of instrumental reason and mystification of technology become visible. Smartness in this context has a dialectical character of increasing chaos of innovations, projects and digital tools and, simultaneously a mean of control over its own and other negative and unintended effects over citizens and nature. Resulting from overestimation and naturalization of technology critique becomes marginalized, as discussed by the authors of critical theory (Horkheimer & Adorno, 1944/2006). This ideology is established using public rhetoric, which indicates the similarity of Hamburg’s governance and culture industry, which objectify the voter and the politician. Such characteristics expose SC ideology as not anthropocentric but rather capital-oriented. At this point we call rather for human-focused urban development than for post-androcentric one (Yigitcanlar, 2018) in order to enable inclusive policy-making and to strengthen far-reaching awareness for ecological issues.

The encouragement of instrumental reason, as one which is concerned with means and not their aims or risks (Horkheimer & Adorno, 1944/2006), is even articulated clearly by the government of Hamburg. That is to say that the slogan of the introduced innovations is “digitalization first” (Scholz, 2016a), meaning a call for an unlimited trial-and-error implementation method of smart tools (Scholz, 2014a, 2014b, 2016a, 2016b). The associated overestimation of technology as described by Horkheimer & Adorno (1944/2006) is formed by the unreflected focus on the means of urban progress - smartness - and its considered positive effects. In these terms several casualties were assumed certainty-based in form of a master discourse (“I firmly believe” in Scholz, 2014a: 1), despite the absence of coherent agenda, which could enable a development of sustainable SC (Yigitcanlar, 2018) or reflection of the urban digitalization in general. The unquestioned relations between smart innovations and increase in quality of life (Rothwell, 2014) or between technology and progress (“Progress through technology”, Scholz, 2014a: 2) form SC as the indispensable solution for political issues (“Smart Cities are the future” in Schmoll, 2017). This relation is strengthened by promises of “City of the future” (Rothwell, 2014), “revolution with comfort” (Rothwell, 2014) or inevitable betterment of the status quo (“improve the quality of life” in Horch, 2014). Besides the positively connoted harmonization promises the indispensability of smartification is achieved with the negative mystification of digitalization (e.g. digitalization as “tsunami” in Scholz, 2016a), which equals international challenge of urban digitalization to a powerful natural phenomenon, transferring naturalization of technology and limiting the possibility of critique.

The case of connectedness through technology typifies for the lack of coherent relations between political issues, means and aims, which is

characteristic for instrumental thinking. Connectedness is presented as a solution (Rothwell, 2014), despite the absence of the issue. Such rhetoric appears contradicting, since it appeals for the flexibilization of decision-making (Scholz, 2016a) and implementation of multiple smart projects, but also mystifies digitalization in a negative way as a tsunami (Scholz, 2016a). However, since urban digitalization includes salvation promises of the actions of the government become justified and unquestionable.

Hamburg's SC decision-making constitutes a form of culture industry (Horkheimer & Adorno, 1944/2006). It reduces the sphere of politics to a form of production, the policy - to a form of commodity, the citizenship - to a quantitatively estimated consumer. Economic competitiveness of Hamburg makes up the paramount of the smartification ("we are the driven, who have to adapt foreign ideas to have any chance at all to survive" in Scholz, 2016a; "Modern cities, like companies, are in competition with one another" in Meinecke, 2014a; "the most adaptable ones survive" in Scholz, 2016a). The implicitness of this objective naturalizes the economization of political sphere and exposes an imperative of self-commodification in order of societal and economic acceptance to the politicians and the voters (Horkheimer & Adorno, 1944/2006). This process also presents an alienation of the policy-makers and the voters from their product, since it does not represent any of the actors interests and is merely based on estimated attitudes of a relative small group of "public administration, research, academia, and development, as well as local and international industry" (Horch, 2014: 1) or citizenship as a whole ("SC improves the quality of living" in Meinecke, 2016a). The estimation of the voters objectifies them and the politicians themselves, since it makes the appropriate intercourse of the top-down and bottom-up interests impossible. In this context the consumer of SC policy and the policy-maker become unable to perceive their own needs through the adjustment of the own individuality to the marketed ideals of entrepreneurship, competitiveness and economic success (Horkheimer & Adorno, 1944/2006).

Since indicators for instrumental reason and culture industry are derived from the public rhetoric of Hamburg, it is urgent to assess the notion of society. The missing reflection of the technological measures and objectification of the citizenship and urbanity can lead to unintended effects for unconsidered societal groups. Although Hamburg's officials and their spokespersons emphasize the general profit from the SC implementation, the used notion of society mainly comprises individualized representatives of creative class and investors. This underlines the impossibility of generalizations among the SC-implementation and the need for further case studies of each policies, which are labeled as smart and inclusive.

SC-rhetoric and the associated innovations address merely an exclusive group of Hamburg's inhabitants - of the neoliberal subjects, who demonstrate their entrepreneurial attributes and accountability for Hamburg's digitalization ("we must shape this development in a socially acceptable way" in Scholz, 2014a, 2014b), are challenged to participate, express moderate critique and stay informed (Scholz, 2016a). The individualization of the citizens is expedited through responsabilization of subjects for their malfunctions, such as pessimism towards smartification (Scholz, 2016a) or absence of residence permit in case of refugees (Scholz, 2016a). The dramatization of the increasing urbanization (Horch, 2014) plays in this context a role of further differentiating and individualizing factor, since it constructs an external danger for the city inhabitants. Appropriately for this ideal image of the citizens, the smart participation options take only the opinion of the people into account, who can participate by the physical construction of the city. Consequently, the issue of participation and democracy is reduced to transparency, since the participative tools merely inform citizens or enable expression of opinion for the citizens with construction plans (Scholz, 2016a). The analyzed rhetoric presents SC as a SC 2.0, which addresses the issues of participative and inclusive governance, but the actual smart measures do not support for sustainable democratic structures. Moreover, the implementation of SC-concept was not

justified with the demand of the votership, but again merely by an estimation of its interests.

The exclusion of other societal groups from the SC-agenda setting and rhetorical justification is strengthened by marginalization of critique, which is typical for the phenomenon of instrumental reason (Horkheimer & Adorno, 1944/2006): The interests and the voices, which are unsuitable for the quantification, which scrutinize SC in a structural way, which are not focused on the so called smart development of Hamburg are disqualified. Therefore, the political interests of diverse social groups are not considered within the governance of their living environment. However, moderate critique ("we must make discussion of chances out of discussion of threats" in Offen, 2015) was integrated into policy-making: For example, the issue of data protection is discursively solved through participation, European regulations and coordinating position of the local government. This confers the public rhetoric of SC an eco-modernist character (Krüger, 2013).

The relation of subject to nature changed from uncritical strive to subjugation, which according to Horkheimer & Adorno, 1944/2006 is characteristic for the Enlightenment project, to risk assessment and integration of moderate critique, which are reminiscent of eco-modernist discourse (Krüger, 2013). In this context the idea of a possible holistic quantification of the environment perpetuates, despite the change of the objective. Smart innovations of Hamburg do not address urgent ecological issues, since the need for radical management of the climate crisis is discursively solved through the implementation of economically profitable and acceptable technologies (MLOVE ConFestival UG, Hamburg, 2016): Although the importance of ecological measures is seen as "existential" (Bezirksamt Bergedorf, 2017: 6), they constitute reactive measures ("collection and assessment of emissions data" in Meinecke, 2014b), which aim to adapt the city to the climate change (Behörde für Umwelt und Energie, 2015) without any risks for the economic prosperity and by accepting the possible risks and further exploitation of nature (Krüger, 2013). In these terms the proposed policies do not include structural changes but treat symptoms of the climate crisis with simplified technology-based solutions. For example, the focus is shifted from energy production and consumption to emissions (Dube, 2015), from the waste production to management, etc. Therefore, Hamburg does not comply with the image of sustainable SC or strive to develop mentality (Yigitcanlar, 2018). Instead the environment-friendly policies in the case of Hamburg - SC become a part of the economic sustainability strategy. The overpopulation metaphor illustrates this phenomenon: Despite the increasing urbanization, which also results in an overload of local environment with negative effect on the climate (Bezirksamt Bergedorf, 2017), the officials try to make the city attractive (Horch, 2014) in attempt to retain the competitive status of Hamburg. These symbols demonstrate the contradiction between the desire to control and subject nature and the failure of technological reason to construct a holistic system.

3.1. Towards a formulation of the ideology behind the SC of Hamburg

Several suggested ideological structures found their place in public rhetoric of Hamburg. Firstly, the elements of instrumental reason were articulated: SC was simultaneously negatively and positively mystified as uncertain natural upheaval and as a redeeming technology. These ideological convictions limit the possibility of critique and of the structural change, since the technological pessimism becomes excluded from political discourse. Overestimation of SC solutions is manifested and strengthened by the policy making and public rhetoric, which resemble culture industry: The adherence the rhetors' interest to economic sustainability as it is the case in Hamburg reduces the policy making to commodity production. The feeling of security is mediated by an eco-modernist promise of management of uncontrollable issues. Hence conformity with commodity like SC policies is achieved with promises of "Progress through technology" (Scholz, 2014a).

Ideology of SC as practice (for and in itself) in form of policy-making

is bound by economic interests and materializes the latter as SC urban digitalization. We argue that materialization of this ideology manifests its hegemonic character and can present itself as a natural condition of social interaction and development. Consequently, SC as result of this practice imposes an imperative to be creative and participating citizen, to accept urban digitalization and to profit from this trend, to economize every sphere of the living, etc. SC and public rhetoric become forms of reproduction of the governmental ideology. This character of Hamburg's SC-ideology indicates a development trend within international SC discourse.

3.2. The functions of SC ideology

In general, the research strengthens Adorno's (1954) understanding of ideology as justification of the status quo with an empirical example. It demonstrates several subfunctions of ideology, such as its disciplinarity, harmonization, marginalization of critique and limitation of understanding of the capitalism.

The main function of the ideology of SC is *stabilization of status quo*, which is executed in several sub-functions: Firstly, it justifies the profit-oriented policy making by addressing economic sustainability as the central political issue. Further, it *reifies the political decision-making* and consequently *limits* the political sphere to de-politicized managerial process. Accordingly, *critique of such policy-making and the status quo becomes marginalized* what can result in *justification of violence* towards radical and/or structural critics (Io G20-Doku: Der Gipfel der Polizeigewalt, 2017). The latter is also achieved by the *mystification and naturalization of the instrumental reason*, which normalizes technological problem solving and attaches to it salvation promises.

Notion of progress and betterments for all also *transfer the feeling of security* and harmony by *reducing the structural dissonances*. For example, in Hamburg's case the rhetors solved such issues as economic development and environment protection through the term sustainability, which transfers the perception of possible and necessary compromises between the contradiction of ecology and economy. Such rhetoric *simplifies the identification* with rhetor and the policy-making using negatively defined empty signifiers such as smartness (as lack of uncontrollable), efficiency (as lack of waste), responsibility (as lack of uncertain) and progress (as lack of regress). Hence, the culture industry produces policies and acts as *sense-making* attribute, which both sustains the status quo and *mitigates the demand for structural changes*.

Public communication of such ideology has also a *disciplinary function* towards subjects and other cities. It contains a strong *imperative to become a creative citizen* what *justifies non-egalitarian policy-making* and *shifts the responsibility* for societal prosperity from welfare state to individual. Hence, the discussed public rhetoric and its materialization *shapes individual ideology for itself* by normalizing the hegemonic convictions. Resulting *concealment of political and economic status of the subjects* limits the possibility of the understanding of the status quo and its inherent inequalities. Similarly, the cities have to follow Hamburg's smartification appeal in order of sustaining their competitive status. Subsequently, the elements of instrumental reason and cultural industry, detected within Hamburg's public rhetoric become transported to other SCs to be in Germany.

4. Conclusion

This paper aimed at finding out how smartification rhetoric reproduces and manifests an ideology of late capitalism and to what extent does it thereby conceal power relations and injustice. The optimism of the SC-ideology is based on the promise of prosperity for all citizens. However, we have shown that this objective is based on an incoherency of political aims, means and issues. Instead of formulating an agenda in order to achieve the promises (as demanded by Yigitcanlar, 2018), the politicians of Hamburg focus merely on the governance on the means of progress - the smart tools. This constitutes an embodiment of

instrumental reason, as described by Horkheimer & Adorno, (1944/2006). The officials of Hamburg assume in this context the role of ideology producers within the justification of the industry-like policy-making. The acceptance of this ideology is forced through the appeal of self-adjustment and the optimistic harmonization promises. Therefore, optimistic SC ideology reproduces itself through its immanent instrumentality of profit-oriented thinking; the technology of anthropocene, which can possibly address the planetary challenges in an appropriate way (Yigitcanlar, 2018), merely reproduces its own fundament of the subjectification of the human and of the nature. The dialectical character which is attached to SC underlines this thesis: The international intercity challenge of digitalization appears as an unavoidable natural force, which constrains politics to strive for success in urban smartification. Resulting optimistic image of smartification fuels the continuous reproduction of SC ideology.

These findings are based on the conducted rhetorical analysis of (digital) public rhetoric of Hamburg's officials and their spokespersons. Selected political rhetoric motivates SC-policies simultaneously as political mean and as end in context of growth of urban population, international competition and climate change. Besides the representatives refer to reductionist notions of society and sustainability. These convictions indicate elements of instrumental reason and a preference for eco-modernist discourse, they present political decision-making as a form of cultural commodity production. In order to broaden these findings, we suggest analysis of diverse SC as case studies, as well as a discussion of the inter-city ideological interrelations. We also recommend expending the source selection for Hamburg's case. Moreover, in the context of such current topics as fake news and general political populism we encourage the analytical approach to policy-making as a form of cultural industry. Our reasonable pessimism towards increasing urban digitalization prefigures at this point the urgency of further critical SC-research.

The presented discussion confirms the results of the analyses with the Foucauldian approaches and sharpens them (similar to also Brorström, Argento, Grossi, & Almqvist, 2018; Argento, Grossi, Jääskeläinen, Servalli, & Suomala, 2019). Similar as Mora and Deakin (2019) we observed the process-focus of SC ideology. However, we see it as a critical praxis, which imposes a potential danger for the society: In absence of notions of form and function, no critique of these can be articulated. Consequently, smartification bears a potential to become inconceivable and inexorable quasi natural process, which can spiral of control of the democratic society and the values such society represents.

The observations derived from critique of ideology deepen the analysis of SC-development as discussed by Wang (2017) and Vanolo (2013) by drawing upon critical theory and elements of psychoanalysis. By discussing public rhetoric as a mean of ideology transfer, we indicated several motives, which are used to convey harmony and security and function as justification, stabilization and prolongation of the status quo, as a conciliation of the structural societal and economic contradictions. At this point our study adds more detailed descriptions of the functioning of SC ideology as a coherent self-contained and self-reproducing system and its contextualization within the framework of the global high-tech capitalism. The SC ideology has also here a double character: On one side, it follows a disciplinary, controlling agenda in order to de-mystify and objectify the complexity of the urbanity, monitor the urban performance, classify the citizens. On the other - the SC-ideology enables the chaotic completion of reification and commodification of political decision-making and urban planning among multiple actors and public-private partnerships.

In contrast to Grossi and Pianezzi (2017) we underline that this SC-ideology is not external to the urban planning and society but is rather immanent to urban planning within late capitalism. Accordingly, neoliberal society tries to achieve SC as a concrete utopia, which corresponds to its own notions of society, the environment, the politics and the city. The normalization or even naturalization of these notions is achieved by harmonizing components of ideology and its continuous

materialization. Furthermore, since the study by Grossi and Pianezzi (2017) and our own address mainly the public rhetoric and ideology, the extent of societal acceptability of SC ideology stays untouched. We particularly recommend this approach to the further SC research because on its basis the questions of ideological totality could be discussed to point out the counter-discourses and their alternative utopias.

Notes

1. Although many SCs are (being) built from scratch, the following analysis focuses on smartification or altering of already existing cities.
2. The authors of the following article underline the dissociation from anti-semitic positions of Žižek (e.g. Žižek, 2015).
3. Analysis of ideology for itself is suggested for the further research,

Appendix I. Sources overview

Table 1
Articles for the ideology analysis.

Author	Date	Name	Translation	Link
Albrecht, P.	2017	Smart Classroom – Digitalisierung des Unterrichts	Smart Classroom - Digitalization of schooling	http://www.hamburg.de/bsb/pressemitteilungen/9982752/2017-11-30-bsb-digitalisierung/
Behörde für Umwelt und Energie / Authority for climate & Energy	2015	Climate Smart City Hamburg		http://www.hamburg.de/klima/4538742/climate-smart-city-hamburg/
Dube, J.	10.09.2015	Senator stellt Eckpunkte auf Jugendkonferenz vor	Senator presents key considerations at the youth-conference	http://www.hamburg.de/pressearchiv-fnh/4599206/2015-09-10-bue-klimaplan/
Krstanoski, H.	10.12.2013	Politik und Wirtschaft treffen sich zum Smart City Summit Metropolitenentwicklung im 21. Jahrhundert	Politics and Economy meets at Smart City Summit for metropolitan development of the 21st century	http://www.hamburg.de/pressearchiv-fnh/4238422/2013-12-10-bwvi-smart-city/
Kutz, M.	04.10.2016	ELBE+ – Die Leitungstrassen im Hamburger Untergrund im Überblick	ELBE+ – underground pipeline routes of Hamburg	http://www.hamburg.de/pressearchiv-fnh/7075326/2016-10-04-bsw-elbe-plus/
Meinecke, S.	10.09.2013	Auf dem Weg zum Smart Port	On the way to the Smart Port	http://www.hamburg.de/pressearchiv-fnh/4104082/2013-09-10-bwvi-landstrom/
Meinecke, S.	30.04.2014	Hamburg and Cisco agree on corporations		http://www.hamburg.de/smart-city/4311574/cisco-english/
Meinecke, S.	25.09.2014	Smart Cities und die Mobilität der Zukunft	Smart city and mobility of the future	http://www.hamburg.de/pressearchiv-fnh/4379852/2014-09-25-smart-city-summit/
Meinecke, S.	24.05.2016	Auf dem Weg zur vernetzten und klugen Stadt	On the way to the interconnected and intelligent city	http://www.hamburg.de/pressearchiv-fnh/6161048/2016-05-24-bwvi-kluge-stadt/
Meinecke, S.	25.11.2016	Hamburg erfindet Stadt-Logistik neu – viele Unternehmen sind dabei	Hamburg reinvents city-logistics - many businesses join in	http://www.hamburg.de/pressearchiv-fnh/7495190/2016-11-25-bwvi-smile/
Offen, J.	13.01.2015	Digitalisierung der großen Stadt	Digitalization of the big city	http://www.hamburg.de/pressearchiv-fnh/4435132/2015-01-13-bwf-digitalisierung-der-grossen-stadt/
Rothwell, P.	30.04.2014	Hamburg wird zur “Smart city”	Hamburg becomes Smart City	http://www.hamburg.de/smart-city/4306386/cisco-smart-city/
Schmoll, J.	10.07.2017	Deutsche Bahn und Hamburg vereinbaren “Smart City” partnerschaft	Deutsche Bahn (German railway company) and Hamburg agree on cooperation	http://www.hamburg.de/pressearchiv-fnh/9109778/2017-07-10-pr-memorandum-of-understanding/

Table 2
Personal statements for the ideology analysis.

Speaker	Name	Translation	Date	Link	
First Mayor Olaf Scholz	Speech, Forum of Mobility		25.09.2014	http://www.hamburg.de/contentblob/4379840/11de8846117ecd6d43b4d691aef699a0/data/2014-09-25-forum-mobility.pdf	
	Memorandum of understanding		30.04.2014	http://www.hamburg.de/contentblob/4306512/eec2665f63e2b922b249769923713987/data/2014-04-30-smart-city.pdf	
	Universitäts-gesellschaft: Kluge Stadt	University society: Smart City		02.05.2016	http://www.hamburg.de/buergermeisterreden-2016/5965618/2016-05-02-universtaetsgesellschaft/
	World city summit: Smart Cities: Leading the way			12.07.2016	http://www.hamburg.de/buergermeisterreden-2016/6534094/world-city-summit-2016/

(continued on next page)

since it requires an elaborated analysis of individual ideological sets.

4. Governance (Meinecke, 2014b), efficient (Krstanoski, 2013), digital (Rothwell, 2014), participation (Scholz, 2016b), procedure (Meinecke, 2014b), monitoring (Scholz, 2016a), development (Offen, 2015), innovation (Meinecke, 2016a), connection (Scholz, 2014a).

CRedit authorship contribution statement

Lidia Bär:Conceptualization, Methodology, Software, Data curation, Writing - original draft, Visualization, Investigation, Validation, Writing - review & editing.**Marinus Ossewaarde:**Supervision, Writing - review & editing.**Minna van Gerven:**Supervision, Writing - review & editing.

Table 2 (continued)

Speaker	Name	Translation	Date	Link
	Senatsfrühstück HamburgAmbassadors	Breakfast of the senate “HamburgAmbassadors”	10.05.2016	http://www.hamburg.de/buergermeisterreden-2016/6045622/2016-05-10-ambassador/
Senator Horch	Welcome note		25.08.2014	http://www.hamburg.de/contentblob/4379864/67a02dda1e7903f69d40e43910d29bbd/data/2014-09-25-bwvi-welcomenote.pdf
Dorothee Stapelfeld	Senatsempfang zur Eröffnung der Intergeo, Dorothee Stapelfeld	Opening senate reception for Intergeo	10.10.2016	http://www.hamburg.de/bsw/reden/7191872/2016-10-10-se-intergeo/

Table 3

Booklets for ideology analysis.

Name	Translation	Date	Link
Öffentliche Auftaktveranstaltung: mySMARTLife – Hamburg Smart city booklet	Public opening event: mySMARTLife - Hamburg	12.05.2017 2016	http://www.hamburg.de/contentblob/9017966/2c9030c61db3fb94f2838d808232d0d9/data/d-auftaktveranstaltung-doku.pdf http://hamburgsmartcity.com/wp-content/uploads/2015/11/Hamburg-SmartCity-Booklet-2016.pdf

Appendix II. Coding scheme

Table 4

Coding scheme for the concepts of Dialectics of Enlightenment.

Concept	Items	Codes
The instrumental reason	Mystification of technology Limited discussion of possible risks and actual aims Embedded resentments	Innovation, solution, clean, estimate, optimize, control Profit, efficiency, effectivity, quality
Cultural industry	Managerialism Classification of the citizens Displacement of political goals	Our interest, society, we, community, citizen Governance, efficient, digital, participation, procedure, monitoring, development, innovation, connection University, creative, business, industry Profit, progress, economy, competitiveness, industry, production, efficiency, offer

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