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Building the sustainable city through Twitter: Creative skilled migrants and innovative technology use

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ABSTRACT

We investigate the role of creative skilled migrants in broadcasting an alternative use of technology in support of a sustainable smart city. We do so by analyzing the themes they produced on Twitter. We focus on Amsterdam as a case, and urban planners and designers as examples of creative migrants. Computational methodology allowed for a selection of naturally occurring data in social media. We show that the creative migrants actively contribute to shaping the smart-sustainable city through the themes of top-down technological solutions and bottom-up participation by highlighting innovative uses of technology in support of the environment and citizens' needs. However, the migrants do not question received historical and geopolitical power constellations. Moreover, they propose the Western city as a role model for solving pressing urban problems.

1. Introduction

Cities are competing to build smart and creative urban spaces, characterized by social innovation, participation, and entrepreneurship (Angelidou, 2014; Cardullo and Kitchin, 2019; Kaplan et al., 2016; Kitchin, 2014c; Sassen, 1991). We follow Morozov and Bria (2018: 4) in defining *smart* as 'advanced technology deployed in cities with the intent of optimizing the use of resources, producing new resources, changing user behavior, or promising other kinds of gains in terms of, for example, flexibility, security, and sustainability'. In the vision of the smart city, technology is the key to triangulating big data with human capital and policies to make cities grow and enable a good life for city dwellers through sociocultural and economic development (Allwinkle and Cruickshank, 2011; Caragliu et al., 2009).

The smart city is an urban space shaped by global technology companies, governments, and knowledge institutions that collect and monitor data produced through digital devices (Allen et al., 2016; Kitchin, 2015; Swilling, 2016). These data allow for a better understanding and efficient management of urban processes, contributing to more sustainable urban spaces (de Waal and Dignum, 2017; Kitchin, 2014a, 2014b; Söderström et al., 2014). More specifically, the smart city agenda aims to support sustainability, which is often understood as a function of innovation in relation with technology (Haarstad, 2017). However, Martin et al. (2018) question whether digitization can actually deliver sustainability, especially environmental protection and social equity, given that economic growth seems the main concern of urban development.

In order to give rise to more sustainable modes of urban development, technology should be geared to serve the needs of the citizens

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(McFarlane and Söderström, 2017), and citizens should be asked to participate in innovation processes (Castelnovo et al., 2016; Dameri, 2013; de Waal and Dignum, 2017; Joss et al., 2017, Martin et al., 2018). Experiments are emerging in cities such as Amsterdam and Barcelona (Angelidou, 2014; Calzada, 2018; Zandbergen and Uitermark, 2020), setting the basis for a knowledge society around a political economy of residents, social entrepreneurs, and knowledge institutions, all held together by the ethos of participation, data ownership, and creative solutions towards those issues. Creative talent is a key part of this vision. Since this talent cannot be supplied by local urban and national resources alone, governments are competing for attracting educated migrants with professional skills (Florida, 2002; Hu, 2014; Yigitcanlar and Lönnqvist, 2013).

The aim of this paper is to analyze whether creative skilled migrants contribute to broadcasting an innovative use of technology in support of sustainable urban development. We explore whether they contribute to the technocratic approach financed by corporations and governments or consider an alternative use of technology that is at the service of the citizens and the environment. To address these issues, we carry out an analysis of themes creative skilled migrants produced on Twitter. We propose an innovative mixed-methods approach, inspired by recent proposals in health social science, which combines quantitative and qualitative methods (Meixner and Hathcoat, 2019). We adopt an *explanatory sequential emergent design* which consists of a quantitative phase followed by a qualitative one. The latter is based on a thematic analysis, in which the quantitative results are interpreted to show more in-depth what the data mean (Creswell, 2015; Creswell and Plano Clark, 2018).

Our study focuses on creative skilled migrants since they are equipped to see opportunities for new ideas by shifting between different cultural, linguistic, and social contexts (Gelb and Krishnan, 2018). They increasingly exercise transnational economic and political power through creativity and innovation (Zapata-Barrero and Rezaei, 2019). As transversal enablers (Wise and Velayutham, 2009, 2014), they have the potential to connect local urban spaces to global ones (Nadler, 2013) and can trigger citizens' participation due to their digital connectedness and social media use, including Twitter.

We conceptualize Twitter as a digital space of encounter where information, beliefs, and values are put on a public agenda and have the potential to gain discursive traction. In this paper, we show how Twitter discourse contributes to the datafication of the city and eventually to a technocratic smart city discourse (Kitchin, 2014b; Kitchin and Dodge, 2011; Sui et al., 2012). We also show how Twitter becomes a space to broadcast a more socially-driven use of technology in support of sustainability.

We focus on creative migrants living in Amsterdam. We take Amsterdam as a case study of a smart city that fosters social innovation through policies, material resources, and human capital. We follow Flyvbjerg (2011) in assuming that case studies are useful for generating and testing hypotheses about social life because of their contextual anchoring (Forrest-Lawrence, 2019). Furthermore, case studies can provide reliable information about the broader class to which the cases belong (smart cities).

This paper is innovative in several respects. At the *theoretical level*, we show that creative skilled migrants strongly believe in the use of technology to foster sustainable development but also broadcast an innovative use of technology in support of the environment and citizens' needs. They highlight creative projects, the use of alternative energy, and the relevance of a circular economy. These aspects co-exist in the communication of the creative migrants active in Amsterdam, showing the potential for a hybrid smart city (Calzada and Cobo, 2015; Kummitha and Crutzen, 2017; Trencher, 2019).

At the *methodological level*, the paper exploits the benefits of a novel mixed-methods approach applied to social media data that combines a quantitative and qualitative analysis. Interviewing, focus groups, and observational data are among the most common methods used to collect qualitative data, as is the case in Haarstad's study (2017) which analyzed the role of sustainability in the smart city discourse. Our work differs in that we rely on a thematic analysis of social media data (compare Franz et al., 2019), harvested through an innovative computational methodology, contributing to the domain of social media mixed-methods analyses (cf. Andreotta et al., 2019).

At the *policy level,* we claim that digital technologists, urban planners, and municipalities could benefit from the smart city discourse promoted by creative migrants since they engage with a broader notion of sustainability that goes beyond the promotion of efficiency and growth. Creative migrants could play an important role in empowering citizens and supporting innovative models of sustainable development, triggered by technology.

2. Towards the co-created sustainable city

The smart city is a prototype of a data-driven space (Fernandez-Anez et al., 2018; Hancke et al., 2013; Swilling, 2016). Urban challenges are addressed through technologies as devices capture and monitor data while mobile computing used by city dwellers produces data about their activities. The smart city heavily relies on (big) data which have been shown to be biased (Chun, 2016; Gitelman, 2013; O'Neil, 2016). Those data, in turn, regulate urban processes and increase their efficiency (Kitchin, 2014b). In the smart city vision, citizens and social media users are considered merely as data providers, and the digitization of communication opens up new methods for data collection and analysis, datafying the city. Social action is transformed into online quantified data that allow for real-time tracking and predictive analysis based on people's behavior (Lazer et al., 2009; van Dijck, 2014). These data trigger new forms of entrepreneurship in the knowledge economy, which is driven by innovation and creativity (Kitchin, 2014c).

The technology-driven vision of the smart city has been subject to much criticism. It is considered as a technocratic approach, serving the interests of coorporations and governments, rather than citizens (Allen et al., 2016; Cugurullo, 2018; Hajer, 2016; Kitchin, 2014c; Hollands, 2015; McFarlane and Söderström, 2017; Vanolo, 2014; Trencher, 2019). Martin et al. (2018) claim that the neoliberal smart city vision is a product of the convergence of three visions of the future city: the digital city, the entrepreneurial city, and the sustainable city. Digital innovation is key to make the smart city efficient in addressing pressing issues. Martin et al. (2018) question this assumption by identifying five smart-sustainability tensions and highlight the need for grassroot innovation emerging from civil society to achieve more sustainable modes of smart urban development.

There is the need to link the smart city vision to a social agenda in which technology is used to empower community networks and to monitor equal access to urban infrastructures (Söderström et al., 2014; McFarlane and Söderström, 2017). Citizens are encouraged to participate in the development of the smart city as co-creators (Zandbergen and Uitermark, 2020), pushing a bottom-up approach, exemplified through maker-culture, hackathons, and living-labs (Castelnovo et al, 2016; Dameri, 2013; Joss et al., 2017; de Waal and Dignum, 2017). They have the potential to give rise to an alternative view in which technology serves citizens' needs and environmental protection.

More recently, citizen-centric approaches to the smart city are blended with a new perspective on data ownership that is at the basis of the experimental city (Calzada and Cowie, 2017; Evans et al., 2012; Shilton, 2016). Citizens should be protected from data-intensive technologies, and data should be conceived as a common good and be open to local companies, social platforms, and organizations, creating long-term public value (Bria, 2018). Citizens are not mere data providers but decision-makers. Data ownership becomes a crucial issue, and emerging initiatives provide tools for technological sovereignity and data transparency (Roio, 2018).

Amsterdam is an example for an urban space that is highly datafied and promotes itself as a city pushing data ownership and transparency (Angelidou, 2014; Calzada, 2018). Digital 'social sorting systems' (Graham & Zook, 2013: 77), composed of devices, platforms, and the people using them, mediate the representation and perception of urban space, with technologies becoming experience markers (de Waal, 2013). Mobile technologies and social media are crucial for the datafication of the city (Mayer-Schoenberger and Cukier, 2013; van Dijck, 2014) and digitizing urban space. The city also creates favorable conditions for creative migrants, including an attractive living environment and labor market, and English as a lingua franca (Engbersen et al., 2017; Nadler, 2013; Polson, 2015; Relph, 2008). Amsterdam has a reputation for being a global hotspot for innovation, a hub for knowledge creation in Europe, and at the core of the creative industries (Angelidou, 2014; Bontje et al., 2009). Amsterdam has been traditionally recognized as an equitable and progressive city (Fainstein, 2014), and one that has found the right trade-offs between diversity, growth, and sustainability (Fainstein, 2010; Uitermark, 2009 for a different view) as well as an expressed desire for democratic data governance and citizen participation (Calzada, 2018). Furthermore, Amsterdam supports the Amsterdam Smart City program which is a partnership among business authorities, research institutions, and citizens. The program includes several projects across neighbourhoods, focussing on energy transition and connectivity (Angelidou, 2014). Transnational creative migrants heavily contribute to promoting the city and its datafication by participating in a discourse of cities as places of innovation and possibilities (Shaw and Graham, 2017).

3. Creative migrants and the Twitter contact zone

Economic, cultural, and social capital have been identified by Zapata-Barrero and Rezaei (2019) as giving transnational migrants an advantage in their entrepreneurship. Capital plays an important role in creating opportunities for new ideas and eventually giving rise to innovation (Gelb and Krishnan, 2018). An example is highly-skilled Asian migrants in Silicon Valley that use their linguistic, cultural, and technical capital to establish social and business networks between geopolitical regions (Saxenian, 1999, 2005). The heterogeneity of social networks for transnational entrepreneurs is amplified through digital platforms (Solano, 2020). They contribute to creating a sense of affective, cultural, and social belonging (see Smets et al., 2019) as well as a sense of place and imagined mobility (e.g., Lim et al., 2016; Witteborn, 2019).

In this paper, we work with the concept of the contact zone to explore social media as digital spaces of encounter. Pratt (1991) conceptualized contact zones as spaces of voluntary and involuntary encounter, in which cultural beliefs, values, and knowledges compete for domination. Contact zone, thus conceived, is a space of rupture and struggle over symbolic resources and meanings with material consequences. But it is also a space of emancipation from oppressive structures and a space of potentiality. Unexpected media practices and the public spaces they create are examples (Monachesi and Turco, 2017).

Our study is similar to Polson (2016) who illustrated the importance of digital platforms to create mobile meeting places for shared experiences. Likewise, Yeoh and Willis (2005) showed that highly-skilled transnational migrants create contact zones in urban spaces through interpersonal encounters. In contrast to those previous studies, which framed highly skilled migrants as blending out local politics and bonding over transnational life trajectories, our analysis shows a more mixed picture. We thus cannot fully agree with statements about skilled migrants 'as rootless merchant sojourners' (Cheah, 2001: 135) or 'cosmopolitans who are basically indifferent to where they live(d)' (Robbins, 1998: 3).

4. Methodology

The qualitative analysis of the discourse of creative skilled migrants presented in this paper is embedded in an innovative mixed-methods approach (Meixner and Hathcoat, 2019) to social media data. We adopt an *explanatory sequential design* which consists of a quantitive phase followed by a qualitative one. Design can be *fixed* or *emergent*. The latter occurs when quantitative results ask for further explanation (Creswell, 2015; Creswell and Plano Clark, 2018). This is the case in our research in which a quantitative analysis of the data (compare Monachesi, 2020) informed the design of a qualitative follow-up study, described in this paper, in order to provide a more in-depth interpretation of the data at hand.

Social media analysis has the advantage to rely on data that emerge from real-world environments in which various types of people engage in social interactions which are not elicited by researchers. However, harvesting data from Twitter can be challenging. Similar to Andreotta et al. (2019), we have employed a computational approach to collect data from Twitter. Their method relies on keywords to extract a data corpus and on topic modeling to organize the tweets into topics that drive the creation of a dataset. A qualitative thematic analysis is carried out to inductively derive themes from this subset of data in order to answer research questions (compare

Braun et al., 2019).

Our approach differs from the previously mentioned studies in that we collected data about a specific group of users - skilled migrants - in order to analyse their topics of discourse. Identifying these users is not a trivial task since they don't characterize themselves as creative migrants on Twitter. Therefore, a novel methodology has been developed to identify them among the followers of organizations active in the creative sector (Monachesi, 2020). On the basis of three different resources, 164 creative professions have been identified and further categorized into 11 sectors within the creative industry. The professions identified were matched with the profile descriptions of Twitter users. Additional criteria were used, such as migrants being located in The Netherlands.

The result is a group of 92 users; 50 males (54%) and 42 females (46%), from which three million tweets representative of their communication were extracted. The creative migrants are entrepreneurs who work as architects, urban designers, and bloggers at the intersection of technology (app developers and programmers) and culture (design and art). The data were collected in 2017. More specifically, the quantitative investigation is based on a frequency analysis of the hashtags (Schwartz et al., 2013) employed by the migrants living in Amsterdam. The analysis reveals that the category and group of *architects and designers,* which we focus on in this paper, is specifically concerned with data (for example, 'data', 'big data', 'opendata,' 'database') and technology ('tech', 'gamesforcities', 'appsterdam' and 'globaldesignathon'). Data and technology are two features of the smart city discourse (Kitchin, 2014c; Morozov and Bria, 2018). Architects and designers also broadcast issues related to sustainability ('circular economy/circulaireEconomie', 'duurzaam'/sustainable) and social innovation ('socialmarketing', 'socialeinnovatieindestad'/'social innovation in the city', 'fabcity', 'livinglabs'), as can be seen in Fig. 1, taken from Monachesi (2020, p.7).

The quantitative methodology summarized above provides the necessary background for understanding the qualitative follow-up study presented in this paper which focuses on a specific category of creative migrants (i.e. architects and designers).[1]

In order to assess whether digital technology is employed to give rise to a more human-centered, co-created smart city (Angelidou, 2014; Castelnovo et al., 2016; Dameri, 2013; Joss et al., 2017; McFarlane and Söderström, 2017) which is concerned with environmental protection and social equity (Martin et al., 2018), it is necessary to investigate the relation among hashtags in more detail through a qualitative analysis, which we present in this paper.

To this end, we created a dataset that comprises the tweets (overall 6000) produced by the ten creatives in the category of *architects and designers* living in Amsterdam. A thematic analysis based on hashtags was carried out to investigate the tweets. Hashtags are a way to add metadata to shared content, and they represent a conceptualization made by the creative migrants of the topics they want to highlight (Bruns and Burgess, 2011; Golder and Huberman, 2006). Hence, we view them as codes that tag the dataset from which themes can be derived by collating the hashtags (unlike Andreotta et al., 2019 who created themes through manual coding).

We follow the various steps suggested by Braun and Clarke (2006 p.82) for thematic analysis and in assuming that "a theme captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set." We have thus taken an inductive approach since the themes are strongly linked to the data through the hashtags. At the same time, the approach is theoretically driven since we have focused only on themes that are relevant for our research question. Those themes are technology, sustainability, and social innovation.

We have extracted the data coded with these hashtags for each theme and assessed whether the remaining data could be coded with any of the identified hashtags in order to avoid possible omissions, given that there is quite a lot of variation in the way users assign hashtags (Golder and Huberman, 2006). We have verified that the collated extracts make a coherent story for each of the three themes and identified sub-themes by further grouping the hashtags. We present relevant examples representative of each theme and sub-theme in the next section.

5. A qualitative analysis of Twitter data: Results

The smart city vision assumes that technology, including data collection and monitoring, will contribute to solve urban challenges (Kitchin, 2014a, 2014b, 2014c). Amsterdam is active in becoming a role model as a smart city that reflects citizens' needs and has chosen data as well as energy as domains to focus on (Angelidou, 2014). Energy consumption for more sustainable cities is key to this vision, even though it is often the only sustainability aspect being addressed (Martin et al., 2018). The creative migrants we have analysed reflect these choices in their tweets, as evidenced by the three themes (i.e. technology, sustainability, and social innovation) discussed in detail below. These are not necessarily the most prominent themes, but they are the ones that are relevant to answer our research question that aims to investigate the role of technology in the smart city discourse in relation to environmental sustainability and social equality.

5.1. Technology

Creative migrants are quite interested in technology and its use as 338 tweets address this theme, constituting 5.6% of the total tweets broadcasted by the creative migrants. The majority of the tweets have been created by the migrants (i.e. 205) while the rest (i.e. 133) are retweets. Within the general technology theme, we identified the sub-themes of "data" (i.e. 'bigdata' and 'open data') with 67 tweets, "forms of technology" ('internet of things', 'robots', 'artificial intelligence', '3D printing') with 146 tweets, and 'digital' (99 tweets). Other subthemes are events (i.e. Ted-talks, Hackathons) with 26 tweets.

[1] For the interested reader, we refer to Monachesi (2020) for an analysis of the additional categories of creative migrants identified.

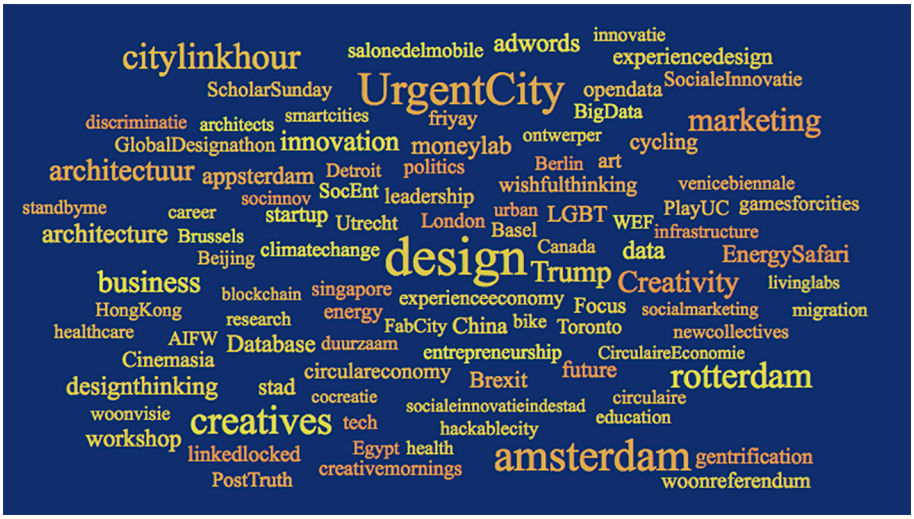

Fig. 1. Word cloud of the hashtags used by the group 'architects & designers'.

Tweets focus on the relevance of data (Example 1), including open data (Example 2) to support urban sustainability:

1. RT @XYZ: How Data Accelerates Transformation towards #LowCarbon Energy Future @XYZ #DigitalDisruption @AccentureNL
2. RT @TheEconomist: Open data can change the way we visualise our cities, and how we can improve them.

Overall, the migrants have high confidence in the value of data-driven decisions, as the examples below show:

3. Met big data meerdere oplossingen aan elkaar koppelen om de infrastructuur van de stad optimaal te benutten #IoT – (*With big data, various solutions are combined in order to exploit the city infrastructure optimally)*
4. Fascinating city comparison tool from ESRI #opendata
5. RT @DuurzaamBV: Luchthaven Schiphol moet hotspot worden voor duurzame datacentra – (*Schiphol airport should become a hotspot for sustainable datacenters)*

Example 3 is in line with the smart city vision and big data supporting city efficiency (Allen et al., 2016; de Waal and Dignum, 2017; Kitchin, 2014a, 2014b; Swilling, 2016) through urban infrastructure, including datacenters (Example 5). Open data can help compare smart cities (Example 4).

The creative migrants don't seem to question the need of data to achieve a sustainable smart city. However, one of the migrants is concerned with inclusion (Example 6):

6. RT @adamsmartcity: What are the possibilities of data? How can we incorporate everybody? Join Smart Data, Smart City #3 18th of May.

Citizens should play a role in the innovation process funded by expert institutions that function as incubators of new ideas (Söderström et al., 2014). The tweet below highlights the importance of citizen innovation:

7. RT @XYZ: Democracy by design, citizen innovation & #datadriven decision making @AMSinstitute interesting themes to achieve digital trust @AmEcBoard.

The AMS Institute (Amsterdam Institute for Advanced Metropolitan Solutions), referred to in the tweet above, is a pioneer in smart city solutions. The institute operates within the logics of city government and its goals of making Amsterdam a role model for smart living. While the partners are public academic institutions, there are also several private ones, including Cisco, IBM, and Shell.

Creative migrants are quite aware that innovative forms of technology play a relevant role in sustainable smart cities. This is especially the case for the Internet of Things (Example 8), artificial intelligence (Example 9), blockchain technology (Example 10), apps (Example 11), and 3D printing (Example 12):

8. RT @adamsmartcity: Join the IoT for greener cities challenge! Enter the decarbathon and win up to 10.000 euros worth of prizes
9. Talking about societal transformation with growin AI. #fun #botdesign #UBI w @XYZ @XYZ
10. RT @XYZ: A #blockchain #circulareconomy? Let's make it happen during the #CE_hackathon2016 @XYZ will keep you updated!

11. Exploring the Sustainable City With Harvard's Ecological Urbanism iPad App
12. The first 3D-printed micro home in Amsterdam https: via @amsterdamsmartcity.

In the tweets above, the creative migrants highlight the importance of technologies to support environmental sustainability and social transformation.

5.2. Sustainability

Creative migrants are concerned with sustainability even though they mainly focus on the economic aspects of environmental sustainability. They dedicated 382 tweets to this theme, which constitutes 6.4% of total tweets. The majority of the tweets are produced by the migrants (i.e. 237), with 145 retweets. Under sustainability, sub-themes include 'sustainable development' (57 tweets), 'climate change' with focus on global warming (39 tweets), 'circular economy' with attention to waste and recycling (122 tweets) as well as 'energy' with various alternative forms, including solar, wind, and bio-fuel (67 tweets). Additional sub-themes that are less relevant to answer our research question are events (29 tweets), alternative mobility modes with special attention to biking (56 tweets), and nature (12 tweets).

As already mentioned, creative migrants are concerned with climate change (Example 13) and renewable energy. Great attention is dedicated to wind (Example 14) and especially solar energy (Example 15) or energy produced through alternative and creative sources (Example 16):

13. RT @XYZ: Brilliant graphic from @XXX – 21st century Earth is warming more rapidly than at any time in the last 150 years.
14. RT @XYZ: #Belgium To Build A Manmade Island to Store #Wind Energy Via Pumped-Storage #Hydro #climate
15. RT @XYZ: Tata Steel gaat komende 2 jaar 80.000 #zonnepanelen plaatsen op zijn daken in IJmuiden, daarmee grootste van NL! *(Tata steel will place 80.000 #solarpanels on its roofs in Ijmuiden in the next 2 years, it will be the biggest in NL!)*
16. RT @HongKongKvKNL: Dutch energy research centre @ECN: Seaweed farming opens doors to new energy source. @DutchNewsNL

Creative migrants are in support of the green economy which is highly valued in The Netherlands. Media are regarded as important for alternative information and analyses of the green economy (e.g., the program *tegenlicht* or the progressive channel *vpro*) as well as a popular site for alternative lectures in the city (*De Balie*):

17. RT @XYZ: Green is good business: nu #tegenlicht @vpro, 25 april in @stadslevenams in @DeBalie.

The circular economy, aiming at increasing efficiency in resource management and providing sustainable consumption solutions, is crucial for achieving a sustainable smart city. Example 18 indicates that creative migrants see Amsterdam at the forefront in this respect while the tweet in 19 provides an example of an innovative project that aims at decreasing food waste in Kenya:

18. Amsterdam faciliteert een circulaire economie graag met jou. Deel je ideen en initiatieven, groot of klein - (*Amsterdam facilitates a circular economy with you. Share your ideas and initiatives, big or small* -)
19. I love this - The (…) project - social business and circular business in one!

Amsterdam promotes many initiatives in support of sustainability, as can be seen in Example 20, which shows support for the entrepreneurial spirit of the Amsterdam North municipality. In Example 21, the possibility of subsidies for electrical cars is advertised while Example 22 questions the role of cities in making Europe more sustainable:

20. RT @duurzaam020: Stadsdeel Noord daagde ondernemers uit: 'Kom met duurzaam idee'. 5 winnaars, deze week in beeld: Homecomposter – (*The North city municipality challenges entrepreneurs: come up with sustainable ideas. 5 winners, this week attention to the Homecomposter*)
21. Nieuwe Amsterdamse subsidie voor 100% elektrische auto's - De gemeente Amsterdam heeft een nieuwe subsidieregeling. – (*New Amsterdam subsidy for 100% electric cars. The municipality of Amsterdam has new rules for subsidy*)
22. RT @XYZ: Vandaag stellen de 28 EU Lidstaten de EU #UrbanAgenda vast. Weten wat steden doen om Europa duurzamer te maken? - (*Today the 28-member states of the EU approve #Urbanagenda. Do you want to know what cities do to make Europe more sustainable?*)

Moreover, Amsterdam is envisaged as a global city that triggers environmental sustainability through a circular economy and economic opportunities along with other European and US cities, as shown by the tweets below:

23. RT @XYZ: From #Paris, to #Boston to #NewYork: Cities go green in defiance of Trump. #ActOnClimate #ParisAgreement #Forward
24. RT@XYZ: London, Amsterdam, & Copenhagen to Collaborate on #CircularModel for Plastics
25. RT @XYZ: Steden nemen voortouw in #circulaire economie. Wat doet @AmsterdamNL? (*Cities are leaders in circular economy. What is Amsterdam doing?*)

Hong Kong, for example - Special Administrative Region (SAR) of the People's Republic of China - is displayed as a place of extensive food waste and of environmental problems. From the perspective of the migrants, those problems can be alleviated through the leadership of Western, specifically Dutch, circular economy know-how:

26. RT@HongKongKvKNL: Interessante #infographic van @SCMP_News: Tackling #HongKong's Food Waste Problem. Kansen voor Nederland? (*Interesting #infographic from @SCMP_News: Tackling #HongKong's Food Waste Problem. Chances for the Netherlands?)*
27. RT@HongKongKvKNL: #Reclycling blijft een lastig probleem in #HongKong. Misschien kan Nederland een rol spelen? (*#Reclycling remains a difficult problem in #HongKong. Can the Netherlands maybe play a role*?)

A frequency analysis of the users' tweets revealed that terms such as Amsterdam, China, and Hong Kong occured with similar frequency but Amsterdam was repeatedly highlighted as a main center for eco-sustainability:

28. Amsterdam = hotspot for #sustainable growth @circleeconomy
    #Sustainability #research grown almost twice as fast as research overall between 2009 and
    2013 (7.6%) http://… @ElsevierConnect2013 (7.6%) http://… @ElsevierConnect

Like the other creative migrants, this creative migrant is enthusiastic about Amsterdam and its potential of becoming a center for co-created city living.

5.3. Social innovation

Creative migrants are concerned about social innovation, with 482 tweets dedicated to this theme. The theme constitutes 8% of the total tweets, which is the highest percentage of all the themes investigated. The majority of the tweets are created by the migrants (255), with 227 being retweets. Sub-themes include 'social change' (81 tweets), 'creativity' (66 tweets), 'innovation'(99 tweets), 'smart city' (53 tweets), 'social entrepreneurship' (30 tweets), 'social issues' (50 tweets) and 'events' (103 tweets), such as FabLab and Fabcity.

Projects play an important role in promoting social innovation, including one that teaches children in different countries to think and design creatively by using technology. Creative migrants acknowledge that inclusion and co-creation of the city are driven by education:

29. Creative solutions for plastic soup, by children in the (…)[2] #Amsterdam
    Looking forward to Dutch Design Week will speak on: 'Every child a social designer!' #(…)[3].

The importance of 'makerspaces' is acknowledged since they can function as incubators for innovation and entrepreneurship, fostering inclusion and participation (Example 30). Those spaces also encourage tackling 'socially relevant questions' (Example 31):

30. Great news for #makers everywhere! #education will benefit a lot from #makerspace movement! #3dprinting
31. RT @AmsterdamNL: We zoeken startups met innovatieve oplossingen voor maatschappelijke vraagstukken. – *(We are looking for startups with innovative solutions for socially relevant questions.)*

Creative migrants are proud residents of Amsterdam as they continue to find proof that the city (and the country) is at the forefront of social innovation. Hence, they broadcast achievements with respect to innovation (Examples 32–33):

32. RT @XYZ: Congratulations to #iCapitalAwards winner #Amsterdam @AmsterdamNL
33. RT @XYZ: 'Netherlands is seen as leading in innovation as a sustainable urban delta' @XYZ @XYZ

Available funding and resources were announced and shared with the network, as can be seen in the examples below:

34. RT @adamsmartcity: The City of Amsterdam launched a Circular Innovation Programme. Check the involved projects at https://…
35. RT @adamsmartcity: Do you need a meeting room or office? @AmsterdamNL shares city-owned offices with their residents!

The examples point to the importance of cities making material resources available to urban residents to encourage social innovation.

[2] We deleted the project name to ensure the privacy of the sender even though users agreed with their data being public when engaging on Twitter.

[3] See above.

6. Discussion

The results presented in the previous section illustrate that the creative migrants are very much connected to Amsterdam as a smart city by retweeting what seem to be pressing urban problems. They broadcast human-centered solutions to social and environment issues and cooperative models that value grassroots deliberation on issues like sustainability and the environment (compare Calzada, 2018; Martin et al., 2018). Among the human-centered solutions broadcasted, there is a project that exploits the untapped creative potential of children through evidence-based design thinking. Design is taught in various countries based on a Western pedagogical model, using technology as the basis for innovation. There is the danger, however, that techno-centric solutions silence local ways of thinking about technology and innovation.

At the same time, creative migrants promote and support a discourse of datafication of urban infrastructure (Mayer-Schoenberger and Cukier, 2013; van Dijck, 2014). Twitter represents a digital medium in which creative migrants promote 'data' for the improvement of urban life. However, data ownership in the form of data commons were hardly ever proposed, and corporate data extractivism not much questioned. As discussed by Morozov (2018), there is an interplay of two conflicting dynamics. On the one hand, there is data extractivism triggered by big tech's dependence on new data sources. On the other, there is data distributism, promoted by those that oppose big tech's development. It is unclear who should manage these data, given that citizens are increasingly more skeptical about the state supporting their interests. Morozov (2018) suggested the city as a place in which new radical democracy can arise, aiming at exploiting big data and artificial intelligence in the interests of citizens.

Creative migrants promote the idea of the global city as a trigger place for environmental sustainability through a circular economy and economic opportunities (Castells, 2010; Sassen, 2005). Amsterdam is linked to cities like London, Paris, and New York, creating 'transnational networks of cities' (Sassen, 2005: 29). As a result, Amsterdam becomes a node in emergent global smart city networks (Graham & Marvin, 2001). The linkages between the cities are green policy, circular economy, and the global city becoming the new nation. Not all cities can stand in dialogue, however. There are hierarchies, with Amsterdam and other Western European and US cities as the moral and practical leaders on topics urgently requiring grassroots participation, such as the environment and waste management.

Some of the tweets broadcast the idea of resident innovation. Others, however, still function within the logics of the technocratic city. They show that the smart city is sponsored by the government, the municipality as well as expert institutions (i.e. AMS Institute), which are incubators and financiers of innovative ideas (Söderström et al., 2014). These expert institutions reinforce the technocratic theme of the smart city as they have the financial and political clout to dictate which problematics will be addressed and solved.

7. Conclusions

This paper made three arguments. First, creative migrants contribute to shaping and representing the smart city. Second, this happens on and through social media like Twitter. Third, in the communication of the skilled migrants, technology plays a relevant role, both, in its technocratic aspect and as a means to serve the environment and citizen's needs, pointing to the potential for a hybrid smart city (Calzada and Cobo, 2015; Kummitha and Crutzen, 2017; Trencher, 2019). As suggested by Martin et al. (2018), more sustainable models of smart city development need grassroots innovation and citizens' empowerment. Our paper shows that the creative migrants analysed play an important role in broadcasting grassroots initiatives aimed at social inclusion and the circular economy. Therefore, digital technologists, urban planners, and municipalities could be inspired by creative migrants. The migrants can play an important role in raising awareness within civil society by broadcasting relevant topics and linked activities through Twitter and by giving rise to a more emancipatory and innovative smart city agenda.

While co-creation and participation are important issues, the migrants still argue for the importance of datafication of urban space, thus acknowledging the role of government and corporations in data governance. Data ownership as a key component of the co-created city was not a primary concern for the creative migrants in 2017 in Amsterdam. The latter stands in contrast to cities like Barcelona that have pushed innovative data commons initiatives, which have been taken up by citizens (Calzada, 2018).

Technology plays an important role in the tweets of the creative migrants. However, there is a danger of taking technology as the default mechanism for technocentric design solutions, which silences local ways of living. The critique of a universalizing approach to technology is in line with the extant literature on the decolonization of technology and data (e.g., Milan and Treré, 2019). The tendency of a Western-centric view is compounded by the fact that the migrants connect only with spaces of similarities (e.g., New York, London, Paris). Those spaces represent the ideal global city of the future in terms of architecture, progressive thinking, education, sustainability, and solutions for the migrants. The migrants in this study thus become part of a global expert elite with shared beliefs, similar to the manager elite identified by Castells (2010).

In sum, creative migrants are change agents (Riddle and Brinkerhoff, 2011). As urban dwellers, the migrants we analysed engaged locally in issues of global concern. Twitter was the meeting place where they could share visions linked to the environment, green energy, the circular economy, and sustainable development. But while the migrants in this study did engage by acting out their positions on Twitter, political involvement stopped short of actively challenging local politics. In fact, the migrants benefited from local fundings and initiatives that they shared and announced, thus becoming part of a political establishment promoting urban living on the terms of those with capital, knowledge, and discursive power. To conclude, pro-market and social justice visions are not mutually exclusive, and neither are the technocratic and co-created sustainable city. Migrants play an important part in the deliberation process in urban debates and are active producers of digital contact spaces that shape different political agendas, distinct needs, and possible solutions for more innovative sustainable urban living.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

Angelidou, M., 2014. Smart city policies: A spatial approach. Cities 41, S3–S11.
Allen, A., Lampis, A., Swilling, M., 2016. Untamed urbanisms. Routledge, London, United Kingdom.
Allwinkle, S., Cruickshank, P., 2011. Creating smart-er cities: an overview. J. Urban Technol. 18 (2), 1–16.
Andreotta, M., Nugroho, R., Hurlstone, M.J., Boschetti, F., Farrell, S., Walker, I., Paris, C., 2019. Analyzing social media data: a mixed-methods framework combining computational and qualitative text analysis. Behav. Res. 51 (4), 1766–1781.
Bontje, M.; Pethe, H.; Petrasch, F.; & Tuppinger, K. (2009). Amsterdam: an attractive creative knowledge region? The view of transnational migrants. ACRE report 7.1. AMIDst. Amsterdam: University of Amsterdam.
Braun, V., Clarke, V., 2006. Using thematic analysis in psychology. Qual. Res. Psychol. 3 (2), 77–101.
Braun V., Clarke V., Hayfield N., Terry G. (2019) Thematic Analysis. In: Liamputtong P. (eds) Handbook of Research Methods in Health Social Sciences. Springer, Singapore.
Bria, F. (2018). Our data is valuable. Here's how we can take that value back. The Guardian. Retrieved from https://www.theguardian.com/commentisfree/2018/apr/05/data-valuable-citizens-silicon-valley-barcelona, January 15, 2019.
Bruns, A., & Burgess, J. E. (2011). The use of Twitter hashtags in the formation of ad hoc publics. In Proceedings of the 6th European Consortium for Political Research (ECPR) General Conference 2011, 1-9.
Calzada, I., 2018. (Smart) citizens from data providers to decision-makers? The case study of Barcelona. Sustainability 10 (9), 1–25.
Calzada, I., Cobo, C., 2015. Unplugging: deconstructing the smart city. J. Urban Technol. 22 (1), 23–43.
Calzada, I., Cowie, P., 2017. Beyond data-driven smart city-regions? Rethinking stakeholder-helixes strategies. Regions 308, 25–28.
Caragliu, A., Del Bo, C., Nijkamp, P., 2009. Smart cities in Europe. In: 3rd Central European Conference in Regional Science –CERS, pp. 45–58.
Cardullo, P., & Kitchin, R. (2019). Being a 'citizen' in the smart city: Up and down the scaffold of smart citizen participation. The Programmable City Working Paper 30. Retrieved from http://progcity.maynoothuniversity.ie.
Castells, M., 2010. The Rise of the Network Society, Vol. 1. Blackwell, Malden, MA.
Castelnovo, W., Misuraca, G., Savoldelli, A., 2016. Smart cities governance: the need for a holistic approach to assessing urban participatory policy making. Social Sci. Comput. Rev. 34 (6), 724–739.
Cheah, P. (2001). Chinese cosmopolitanism in two senses and postcolonial national memory. In V. Dharwadker V (Ed.), Cosmopolitan geographies: New locations in literature and culture (pp. 133-170). London, United Kingdom: Routledge.
Chun, W.H.K., 2016. Updating to Remain the Same: Habitual New Media. MIT Press, Cambridge, MA.
Creswell, J.W., 2015. A concise introduction to mixed methods research. Sage, Thousand Oaks.
Creswell, J.W., Plano Clark, V.L., 2018. Designing and conducting mixed methods research, 3rd ed. Sage, Thousand Oaks.
Cugurullo, F., 2018. Exposing smart cities and eco-cities: Frankenstein urbanism and the sustainability challenges of the experimental city. Environ. Plan. A 50 (1), 73–92.
Dameri, R.P. (2013). Searching for smart city definition: A comprehensive proposal. International Journal of Computers & Technology, 11(5), 2544–2551.
Engbersen, G., Leerkes, A., Scholten, P., & Snel, E. (2017). The intra-EU mobility regime: Differentiation, stratification and contradictions. Migration Studies, 5/3(1), 337–355.
Evans, J., Karvonen, A., Raven, R., 2012. The Experimental City. Routledge, London.
Fainstein, S.S., 2010. The Just City. Cornell University Press, Ithaca.
Fainstein, S.S., 2014. My career as a planner. J. Am. Plan. Assoc. 80 (3), 268–275.
Fernandez-Anez, V., Fernández-Güell, J.M., Giffinger, R., 2018. Smart City implementation and discourses: an integrated conceptual model. The case of Vienna. Cities 78, 4–16.
Florida, R., 2002. The Rise of the Creative Class. Basic Books, New York.
Flyvbjerg, B., 2011. Case study. In: Denzin, N.K., Lincoln, Y.S. (Eds.), The SAGE Handbook of Qualitative Research. Sage, Thousand Oaks, CA, pp. 301–316.
Forrest-Lawrence, P., 2019. Case study research. In: Liamputtong, P. (Ed.), Handbook of Research Methods in Health Social Science. Springer, Singapore.
Franz, D., Marsh, H.E., Chen J., & Teo, A. R. (2019). Using Facebook for qualitative research: a brief primer. Journal of Medical Internet Research 21(8).
Gelb, S., Krishnan, A., 2018. Technology, migration and the 2030 Agenda for Sustainable Development. ODI and SDC, London.
Gitelman, L., 2013. 'Raw data' is an oxymoron. MIT Press, Cambridge, MA.
Golder, S.A., Huberman, B.A., 2006. Usage patterns of collaborative tagging systems. J. Inform. Sci. 32 (2), 198–208.
Graham, S., Marvin, S., 2001. Splintering urbanism: networked infrastructures. Technological Mobilities, and the Urban Condition. Routledge, London.
Graham, M., Zook, M., 2013. Augmented realities and uneven geographies: exploring the geolinguistic contours of the web. Environ. Plan. A 45 (1), 77–99.
Haarstad, H., 2017. Constructing the sustainable city: examining the role of sustainability in the 'smart city' discourse. J. Environ. Plann. Policy Manage. 19 (4), 423–437.
Hajer, M., 2016. On being smart about cities. Seven considerations for a new urban planning and design. In: Allen, A., Lampis, A., Swillins, M. (Eds.), Untamed Urbanisms. Routledge, London, pp. 50–63.
Hancke, G. P.; de Carvalho e Silva, B.; & Hancke, G. P. Jr. (2013). The role of advanced sensing in smart cities. Sensors, 13(1), 393–425.
Hollands, R.G., 2015. Critical interventions into the corporate smart city. CAMRES 8 (1), 61–77.
Hu, R., 2014. Migrant knowledge workers: an empirical study of global Sydney as a knowledge city. Expert Syst. Appl. 41 (12), 5605–5613.
Joss, S., Cook, M., Dayot, Y., 2017. Smart cities: towards a new citizenship regime? A discourse analysis of the British smart city standard. J. Urban Technol. 24 (4), 29–49.
Kaplan, S., Grünwald, L., Hirte, G., 2016. The effect of social networks and norms on the inter-regional migration intentions of knowledge workers. Cities 55, 61–69.
Kitchin, R. (2014a). Big data, new epistemologies and paradigm shifts. Big Data & Society, 1(1), 1-12.
Kitchin, R., 2014b. The Data Revolution: Big Data, Open Data, Data Infrastructures and their Consequences. Sage, London.
Kitchin, R., 2014c. The real-time city? Big data and smart urbanism. GeoJournal 79 (1), 1–14.
Kitchin, R., 2015. Making sense of smart cities: addressing present shortcomings. CAMRES 8 (1), 131–136.
Kitchin, R., Dodge, M., 2011. Code/space: Software and everyday life. MIT Press, Cambridge, MA.
Kummitha, R.K.R., Crutzen, N., 2017. How do we understand smart cities? An evolutionary perspective. Cities 67, 43–52.

Lazer, D., Pentland, A., Adamic, L., Aral, S., Barabasi, A., Brewer, D., Christakis, N., Contractor, N., Fowler, J., Gutmann, M., Jebara, T., King, G., Macy, M., Roy, D., Van Alstyne, M., 2009. Computational social science. Science 323 (5915), 721–723.
Lim, S.S., Bork-Hüffer, T., Yeoh, B.SA., 2016. Mobility, migration and new media: manoeuvring through physical, digital and liminal spaces. New Media Soc. 18 (10), 2147–2154.
Mayer-Schoenberger, V., & Cukier, K. (2013). Big data. A revolution that will transform how we live, work, and think. London: John Murray Publishers.
Martin, C.J., Evans, J., Karvonen, A., 2018. Smart and sustainable? Five tensions in the visions and practices of the smart-sustainable city in Europe and North America. Technol. Forecast. Social Change 133, 269–278.
McFarlane, C., Söderström, O., 2017. On alternative smart cities: From a technology-intensive to a knowledge-intensive smart urbanism. City 21 (3-4), 312–328.
Meixner, C., Hathcoat, J.D., 2019. The nature of mixed method research. In: Liamputtong, P. (Ed.), Handbook of research methods in health social science. Singapore: Springer.
Milan, S., Treré, E., 2019. Big Data from the South(s): Beyond Data Universalism. Television & New Media 20 (4), 319–335.
Morozov, E. (2018, August 19). There is a leftwing way to challenge big tech for our data. Here it is. The Guardian. Retrieved from https://www.theguardian.com/commentisfree/2018/aug/19/there-is-a-leftwing-way-to-challenge-big-data-here-it-is.
Monachesi, Paola, 2020. Shaping an alternative smart city discourse through Twitter: Amsterdam and the role of creative migrants. Cities 100.
Monachesi, Paola, Turco, Marina, 2017. New urban players: stratagematic use of media by Banksy and the Hong Kong Umbrella Movement. International Journal of Communication 11, 1448–1465.
Morozov, E., Bria, F., 2018. Rethinking the smart city: Democratizing urban technology. Rosa Luxemburg Stiftung, New York.
Nadler, R., 2013. Plugplay places: Lifeworlds of multilocal creative knowledge worker. University of Milano-Bicocca, Milan.
O'Neil, C., 2016. Weapons of math destruction: How big data increases inequality and threatens democracy. ALLEN LANE, London.
Polson, E., 2015. A gateway to the global city: Mobile place-making practices by expats. New Media Soc. 17 (4), 629–645.
Polson, E., 2016. Privileged mobilities: Professional migration, geo-social media, and a new global middle class. Peter Lang, New York.
Pratt, M.L., 1991. Arts of the contact zone. MLA Profession 33–40.
Relph, E., 2008. Place and placelessness. Pion, London.
Riddle, L., Brinkerhoff, J., 2011. Diaspora entrepreneurs as institutional change agents: the case of Thamel.com. Int. Bus. Rev. 20 (6), 670–680.
Robbins, B., 1998. Cosmopolitics: Thinking and Feeling Beyond the Nation. University of Minnesota Press, Minnesota.
Roio, D., 2018. Algorithmic Sovereignty. University of Plymouth, Plymouth.
Saxenian, A.L., 1999. Silicon Valley's New Immigrant Entrepreneurs. Public Policy Institute of California, San Francisco, CA.
Saxenian, AnnaLee, 2005. From brain drain to brain circulation: transnational communities and regional upgrading in India and China. St. Comp. Int. Dev. 40 (2), 35–61.
Sassen, S., 1991. The Global City: New York, London, Tokyo. Princeton University Press, Princeton, NJ.
Sassen, S., 2005. The Global City: Introducing a Concept. Brown J. World Affairs, X I (2), 27–43.
Schwartz, H.A.; Eichstaedt, J.C.; Margaret, K.L.; Dziurzynski, L.; Ramones, S.M.; Agrawal, M.; Shah, A.; Kosinski, M.; Stillwell, D.; Seligman, M.E.P.; & Ungar, L.H. (2013). Personality, gender, and age in the language of social media: The open-vocabulary approach. PLoS ONE 8(9). DOI: 10.1371/journal.pone.0073791.
Shaw, J., Graham, M., 2017. An informational right to the city? Code, content, control, and the urbanization of information: an informational right to the city? Antipode 49 (4), 907–927.
Shilton, K. (2016). When they are your big data: Participatory data practices as a lens on big data. In C. Sugimoto, H., Ekbia, & M. Mattioli (Eds.), Big data is not a monolith. Cambridgem MA: MIT.
Smets, K.; Leurs, L.; Georgiou, M.; Witteborn, S.; & Gajjala, R. (eds.) (2019). The Sage handbook of media and migration. Thousand Oaks, CA: Sage.
Söderström, O., Paasche, T., Klauser, F., 2014. Smart cities as corporate storytelling. City 18 (3), 307–320.
Solano, G., 2020. The mixed embeddedness of transnational migrant entrepreneurs: Moroccans in Amsterdam and Milan. J. Ethnic Migration Stud. 46 (10), 2067–2085.
Sui, D.Z., Elwood, S., Goodchild, M.F., 2012. Crowdsourcing geographic knowledge : Volunteered geographic information (VGI) in theory and practice. Springer, Dordrecht, NL.
Swilling, M. (2016). Towards sustainable urban infrastructures for the urban Anthropocene. In A. Allen, A. Lampis & M. Swilling (eds.) Untamed urbanism. Routledge Advances in Regional Economics, Science and Policy. New York: Routledge.
Trencher, G., 2019. Towards the smart city 2.0: Empirical evidence of using smartness as a tool for tackling social challenges. Technol. Forecast. Soc. Chang. 142 (C), 117–128.
Uitermark, J., 2009. An in memoriam for the just city of Amsterdam. City 13 (2-3), 347–361.
van Dijk, J. (2014). Datafication, dataism and dataveillance: Big Data between scientific paradigm and ideology. Surveillance & Society, 12, 197-208.
de Waal, M. (2013). The city as interface: How new media change the city. Rotterdam: Nai010.
de Waal, M., Dignum, M., 2017. The citizen in the smart city. How the smart city could transform citizenship. *it* -. Information Technology 59 (6), 1–11.
Wise, A., Velayutham, S. (Eds.), 2009. Everyday Multiculturalism. Palgrave Macmillan UK, London.
Wise, A., Velayutham, S., 2014. Conviviality in everyday multiculturalism: some brief comparisons between Singapore and Sydney. Eur. J. Cultural Stud. 17 (4), 406–430.
Witteborn, Saskia, 2019. The digital gift and aspirational mobility. International Journal of Cultural Studies 22 (6), 754–769. https://doi.org/10.1177/1367877919831020.
Yeoh, B.S.A., Willis, K., 2005. Singaporean and British transmigrants in China and the cultural politics of 'contact zones'. J. Ethnic Migration Studies 31 (2), 269–285.
Yigitcanlar, T., Lönnqvist, A., 2013. Benchmarking knowledge-based urban development performance: results from the international comparison of Helsinki. Cities 31, 357–369.
Zandbergen, D., Uitermark, J., 2020. In search of the Smart Citizen: Republican and cybernetic citizenship in the smart city. Urban Stud. 57 (8), 1733–1748.
Zapata-Barrero, R., & Rezaei, S. (2019). Diaspora governance and transnational entrepreneurship: the rise of an emerging social global pattern in migration studies. Journal of Ethnic and Migration Studies. Online first.