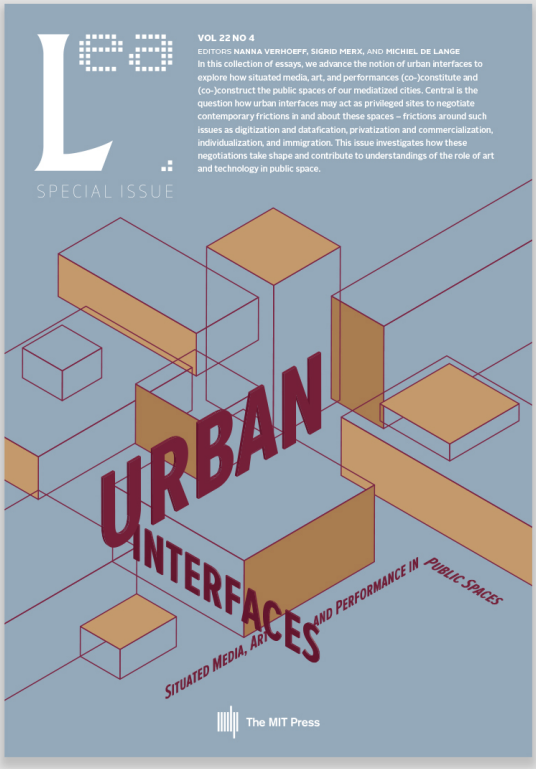

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INTERFACING GENK: CITIZEN PARTICIPATION AND CRITICAL URBAN INTELLIGENCE / GINETTE VERSTRAETE, LIESBETH HUYBRECHTS

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Abstract

Urban interfaces are often understood as straightforward media to foster a standardized customer engagement of citizens with and in smart city processes. In contrast, in this essay we take Johanna Drucker's humanities approach to interfaces as a starting point to redefine the urban interface as a critical zone of relations between multiple frameworks and embodied users. Our aim is to explore the merits of this approach in an urban development project around an old railway track in Genk (Belgium). Here, a low-tech urban interface—a leather carpet—was gradually developed as different people and institutions gave shape to their surroundings, and a more embedded and critical urban intelligence was realized in a process of democratic participatory design.

Keywords: Interface, smart city, participatory urban design, Johanna Drucker, The Other Market

The Smart City

Interfaces have been discussed in the context of the smart city as being the points of contact between users and technological systems. [1] From this perspective, interfaces enable access to the digital services delivered in high-tech urban environments. In 1999, Arun Mahizhnan defined the smart city as a city in which information technology and platforms play a role in improving the quality of life and attain economic excellence. [2] But many different definitions have by now been given to the smart city, and these have generated various views of what urban interfaces are or do in this context. Three main debates in the humanities and social sciences on what constitutes a smart city interest us here, each with another focus on technology, people, and institutions. [3] We argue that all three perspectives are needed to fully comprehend the complexity of smart cities and the interfaces through which we relate to them. This introduction first presents the three discourses, while the rest of the article brings them to bear on a renewed understanding of urban interfaces.

The majority of discourses on the smart city emphasize the technological perspective and target people mainly through narratives of user-friendliness. [4]

display data on the city, such as availability of parking spaces or the amount of energy use, and allow some basic input from citizens, such as pushing a smiley button to express appreciation or report problems in the neighborhood. As Marcus Foth and Martin Brynskov state:

> The future of civic engagement is characterized by both technological innovation and new technological user practices that are fueled by trends toward mobile, personal devices; broadband connectivity; open data; urban interfaces; and cloud computing. These technology trends are progressing at a rapid pace, and have led global technology vendors to package and sell the 'Smart City' as a centralized service delivery platform predicted to optimize and enhance cities' key performance indicators—and generate a profitable market. The top-down deployment of these large and propriety technology platforms have helped sectors such as energy, transport, and healthcare to increase efficiencies. [5]

The people that count in this respect are the good participants contributing to the optimization and distribution of the technologies involved by leaving data and pushing icons.

In contrast to these technology-driven approaches stand views on smart cities as shaped by creative citizens using urban interfaces that specifically address the agency of people. [6] Defining the smart city from the perspective of 'smart people' puts the emphasis on creativity, awareness, learning, skills, and open-mindedness, with the interface as an open platform to accommodate all of this. In the words of Vito Albino and his colleagues: "Problems associated with urban agglomerations can be solved by means of creativity, human capital, cooperation among relevant stakeholders, and their bright scientific ideas and 'smart solutions.' The label smart city therefore points to clever solutions by creative people." [7] New communities fashioned from the collective creative use of these digital technologies and data have, for instance, led to a hacker culture of open data enthusiasts. In his contribution on real-time urban dashboards and citizen-centric views of cities, Michiel de Lange summarizes this development as follows: "Hackability as an affordance of truly smart cities means breaking out of the neat

initiatives." [8]

When seen as integral to the lives of intelligent people collectively taking the city into their own hands, urban interfaces are deemed to go beyond the private interests of the efficient user and give form to common interests and participation in the city as a digitized public space. [9] Often, these interfaces are designed by smart people in the firm belief that in the communal production of the platforms, web portals and apps, citizens are already reflecting on what they want together and how they are going to do it. A well-known example here is Rob Kitchin's *Code for Ireland* initiative, "inspired by Code for America to build apps that work well in a local context and can then be reappropriated for another community." [10] The debate on urban interfaces for bottom-up community purposes has made hacking and co-creation part of the discourse on smart cities. But with users becoming communal software producers, the technological aspects of the interface stay center-stage while no attention is being paid to the larger context.

This brings us to the third aspect of smart cities mentioned above: the institutions. Smart cities are multiply constrained by the private and public institutions that govern them, ranging from municipalities and urban planners, to vendors of city services, and developers of platforms. [11] To engage with the material and social institutional constraints means to open up the depoliticized interactions between people and technology and to ask questions about the conditions and the means to effect social and political change. Rather than simply hack or co-create platforms, perhaps we need to initiate design processes that address the larger contexts – of power, people, money, methods, conventions – within which interfaces play a role. And this is where a certain strand of participatory design becomes relevant.

With its background in theories and practices of citizen participation in the democratic governance of cities, participatory design, as defined by for instance Liesbeth Huybrechts and Eric Gordon, seeks to experiment with the design of interfaces in order to find forms for democratic participation and decision-making in the city. [12] These design experiments aim to enhance civic engagement in city-making while diversifying the types of participants in the process: besides the smart people and the technology used to initiate discussion and negotiation, also the broader public and institutions are included. Considering institutional actors, people, and the 'things' facilitating the engagement processes,

emerge as key elements in enabling participation in city-making, with the city seen as something that is shaped, mediated, negotiated, and contested by many actors on different scales.

This implies that there are other views of what 'smart' in the context of citizen involvement in cities can mean, beyond the engineering and coding approach. By gathering many different actors in and around the city, a more embedded and critical urban intelligence can be realized. [13] If citizen participation is to be truly intelligent, interfaces should be able to move between a micro- and macro-level, between the experience of the user and the institutional frames, and address the affordances, limitations, and multiplicities in between. In order to make room for this vision, we need to reconsider in greater depth what we mean by interface.

Therefore, and in line with this themed issue on urban interfaces, this article will now briefly reconsider the notion of interface through the lens of Johanna Drucker's humanities approach, in which users, technologies, and various mediating environments play a major role. [14] We will then illustrate what this approach can mean in relation to a case of participatory design in the city of Genk (Belgium).

The Interface

The term 'human-computer interface' describes the point of contact between people and computers. The field of human-computer interaction (HCI) is concerned with these points of contact, which include interfaces such as the screen, mouse, keyboard, apps, and all the software and hardware underneath. Like the cinema and the printed word before it, HCI has "developed its own unique way of organizing information, presenting it to the user, correlating space and time, and structuring human experience in the process of accessing information." [15] Theories of the computer interface are wide-ranging and have evolved beyond Lev Manovich's screen-based approach in which he uses an aesthetic metalanguage based on cinema, printed words, and software driven cultural content. [16] Rather than a singular frame or screen that stimulates or guides people's experiences of cultural content, the interface is increasingly defined as a series of *dynamic relations*, not only between humans and information, or humans and technology, but also between humans and various

incompatible systems, codes, physical infrastructures, and institutions.

In “Humanities Approaches to Interface Theory,” Drucker explains these dynamics. [17] She opposes a mechanistic model in which the user interface is seen as a graphically inscribed device for instigating meaning or certain responses. Instead, she proposes to define the interface as a site of disjunctive relations within a system of co-dependence between embodied people and a larger structure of “very disparate frameworks and modalities.” [18] As she describes our encounter with the interface:

> We are constantly in the frame jumping state that disorients the reader, trying to create relations across varied types of material—images, videos, maps, graphs, texts, and the many structuring elements of layout and format that organize the graphic environment … The elements of navigation and way-finding that help orient our experience far exceed the simpler set of devices. [19]

What interests Drucker is not the interface as an object, but as something that is performed by the people using it as they establish difficult relations far beyond the device itself. In the process of selecting icons, pushing buttons, clicking links, and nodes, while plunging into commerce, entertainment, work, and information, people tease out the uncertain relations between themselves, the interface, and the larger system of networks and organizations structuring it. As Drucker says, we need a vocabulary of “spatialized relations” to articulate this dynamic structure of relations between embedded people, interfaces, and the expansive (institutional) configuration: “*Moving through* a library or archive, a landscape, rather than *looking* at the outline or scheme of that space in a flat map or plan.” [20] Navigation, (dis)orientation, and frame-jumping are some of the spatial terms she uses to describe the act of relating to and through the interface. Interfaces help us to reflexively and temporarily ‘orient’ ourselves in our doings with and through them. They set the stage for actions to take place across many layers and levels: Interfaces are “what we do” and “how we do” combined through engagement. [21]

with the larger systems and configurations that make them work. They are, according to Drucker, reflexive mediating environments in action. Interfaces are critical zones of varied user practices making engagement more a matter of reflexive way-finding with and through the interface than a linear pathway through data toward a particular goal. What does this mean for our notion of urban interface within the smart city context, as discussed above? The urban denotes the many scripted arrangements that surround and enable the interface to operate, and that the interface allows us to engage with. In the smart city, one of these arrangements is, for instance, the Internet of Things, which includes wireless infrastructures, sensors, street grids, computation devices in the fabric of buildings, and the large corporations and organizations that govern all of these. The urban thus refers to this whole decentralized system of arrangements that the interface is surrounded by. At the same time – getting back to the user – the urban gets centralized by the screen interface as many people traverse the city through, for instance, their smartphones as they access information about services, streets, and places, or organize social interactions via *Foursquare* or *Tinder*.

Whether we focus on the urban as dispersive operating systems (on a macro-level) or as contained within the user interface (on a micro-level) is thus a matter of perspective and scale. And both levels need to be addressed in the discussion as well as the users' reflexive movements between them. Indeed, a complex interplay of scales, and of order and disorder, is at work when approaching the urban through the interface in Drucker's terms: as a critical zone of co-dependent relations between people, technologies, and disparate expansive environments. In contrast to the marketing hype about smart cities, urban interfaces thus do not yield neutral technical platforms for managing our experiences of pre-existent cities. When interfaces are approached as intrinsically intertwined with the users and surrounding spaces and institutions, cities themselves emerge as multiply interfaced, as always already operated by multiple actors through various technologies of engagement, orientation, and movement. In the final part of this essay, we focus on one case and approach the urban interface as a multiply configured mediating environment through which people try to find their way together, reflexively making and re-making their surroundings as they uneasily jump between the micro-level of experience and action and the macro-level of disparate institutional systems of operation.

The Case of Genk

Let us now further explore this and ask what our approach to the interface delineated above – considering it as a mediating environment of tools, people, and larger configurations – can mean for citizen participation in city-making. We will develop our argument based on a case in which one of the authors was closely involved: an urban development project around the old coal track (*Kolenspoor*) in Genk, Belgium, with ramifications way beyond this one place. [22] Genk is a multicultural city of some 65,000 residents in the province of Limburg, in the Eastern part of Belgium. It is one of the major industrial centers of Flanders, situated on the Albert Channel between Liege and Antwerp. Having grown owing to the coal mining industry in the first half of the twentieth century, the city has been struggling with large unemployment among its many different communities (from Italy, Greece, Spain, Turkey, and Morocco) after the closing of the mines in the 1960s.

As of September 2015, De Andere Markt (The Other Market, DAM), an Urban Living Lab in Genk directed by Huybrechts, has been collaborating on a new plan for the old coal track in Genk together with the Flemish government, the city of Genk, Plusoffice Architects from Brussels, Delva landscape architects from Amsterdam, and, more recently, Buur Office for Urbanism from Leuven. [23]

Figure 1: Map Coal Track Genk, 2016. Image by Plusoffice architects, DELVA landscape

with permission.

Seen from above, the old coal track in Genk embraces the city like a ring figure as it interconnects the different coal mining sites of Winterslag, Waterschei, and Zwartberg (see Figure 1). In the past, miners and coal were transported along this mobility-axis. After the closure of the mines in the 1960s, the physical artery of the region grew obsolete and deserted in certain places, but the city government aims to 're-activate' the entire line as a social and physical connector between town and region, along which a variety of activities can be developed in interaction with the local economy. Today, adjacent to the slag heaps, one can already find the C-Mine cultural center, Thor Park, all kinds of nature areas, the stadium of soccer club KRC Genk, furniture giant IKEA, professional bio-farmers, and Koen Van Mechelen's Biomista – a lab doing experiments with biodiversity, art and heritage. Van Mechelen is known for his Cosmopolitan Chicken Project, devoted to crossbreeding poultry from all over the world.

If the city government and the provincial and Flemish authorities were working on the big picture (including funding), it was left up to the designers and architects of DAM to ensure connections with all that had developed organically and bottom-up alongside the obsolete coal track in all those years. The team explored the daily life around the railway track, mapping all that physically could be seen, heard, and done in its vicinity. They took pictures, made maps and short films, and interviewed those living nearby, thus revealing an informal economy and ecology along the track: all sorts of allotment gardens, several Turkish-Belgian soccer clubs, canteens, compost sites, sheep meadows, but also private backyards, and garages.

Upon charting the activities in the neighborhoods, DAM asked various community actors and experts to 'participate' in imagining a shared future trajectory for Genk based on their knowledge, experience, and the information on the table. The participatory process operated on various levels: with different ethnic communities as well as policymakers, large and small entrepreneurs, universities, cultural institutions, and soccer Club Genk. The coal track, a more than sixty-year-old infrastructure with a multilayered and ramified history within the region, served as central nexus for bringing people and institutions together while developing a multifarious vision of the future.

rather you render a possible configuration tangible and let it interact with a diversity of experiences and perspectives. Thus, practice and reflection are developed and tested together in a process that taps into the engagement of the different participants. Several workshops within the project centered on the question of what people see, are able to do, and want, as well as how they can visualize, represent, and communicate these desires in relation to existing activities around the track. Those many visions were integrated into the design process for the region. This is what was previously described as 'participatory design' (see Figure 2).

Figure 2: Workshop 1: Coal Tracks Around the Map, Boumediene Belbachir, 2016. Photograph by Boumediene Belbachir, 2016. Used with permission.

The Leather Map as Urban Interface

Multiple interfaces were produced during the workshops, but let us consider one in detail, the leather map (see Figure 3), and analyze how it functioned as an urban interface in Drucker's sense.

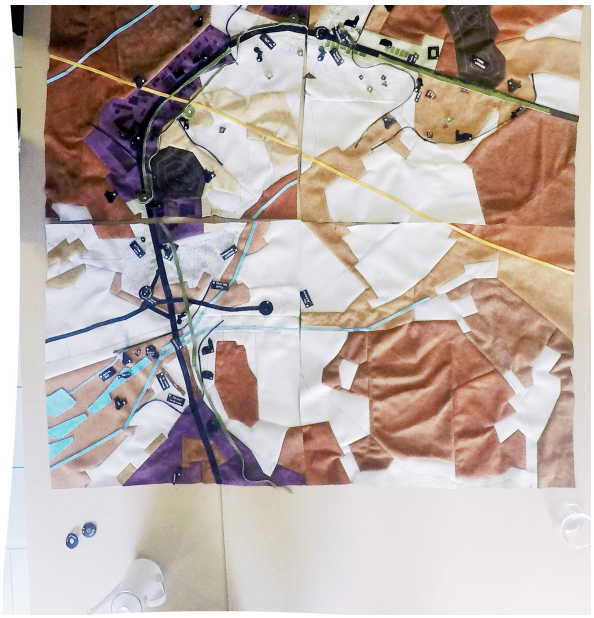

Figure 3: Leather Map, Boumediene Belbachir, 2016. Photograph by Boumediene Belbachir, 2016. Used with permission.

The leather map played a large role as interface because it rallied together different actors and things around the track's future spatial configuration. The map staged a process of linking micro- and macro-level and the various things in between. The leather was plural from the start and consisted of left-over materials donated by a local cabinetmaker. These were used to sew a first version of the region's map based on the initial research results gathered along the tracks by DAM. The preliminary map was presented to the workshops' participants in three large parts. Each piece of leather represented a part of the track including a specific possible future script around a theme following from the fieldwork: food, energy, make industry.

Three groups of actors, three places, three themes and scenarios, three sections of the map, and various small pieces of leather—the assignment from DAM to each group being: how would you like to rearrange the map of your section? Which new connections would you like to make, and which new scripts follow from them? Participants used a stick of chalk to write and could rearrange things through cutting and pasting. Afterward, the three groups met again and the sections were put next to each other, rearranged again, and discussed. Subsequently, the scenarios were again adapted. In a second workshop those various steps were all repeated once more. The map served as a kind of

the group that focused on food mainly added leather elements to the map: actors that needed to be consulted in the future and initiatives they wanted to develop such as launching a co-operative together in a little used church building. The group focusing on energy issues mainly continued to use the leather to work on the track as a trail for mobility by train, bicycle, or electrically powered vehicles.

We can justifiably claim that the map served as a reflexive mediating environment, bringing *together* groups of people with different functions and institutional backgrounds who collectively remapped a shared space. But the map also initiated a frame-jumping *between* different actors and pieces of leather, forcing participants to look at the configuration from a new perspective. Recall Drucker's definition of the user interface as a space of disjointed relations mentioned above: "We are constantly in the frame jumping state that disorients the reader, trying to create relations across varied types of material …" [24] Repeatedly things had to be discussed, considered, looked at, cut, and pasted again—in order to visualize changing perspectives on the coal track. People and things were added along the way. The result is a *patchwork* in the shape of a torn map.

The tears and cuts in this patchwork highlight the disjointed relations involved, the boundaries of the larger configuration. The sewing together of the map was done separately by a group of refugees, Studio Refugee, supervised by Sarah Rombauts (a product designer who graduated from the LUCA School of Arts). [25] The Studio, located elsewhere in Genk and funded by the municipality, developed design, weaving, and storytelling as ways to promote the social integration of refugees. Studio Refugee itself was not part of DAM, yet received some funding from them to collaborate with them for several months and in that period sewed together the first version of the map. The studio was also going to make the final version, but at this point this has not happened yet. The position of the studio in the process was ambiguous from the start: it was simultaneously central and marginal to the space of engagement. The refugees stitched together various fragments into a first design, thus producing a basic cohesion (performing a central role); but the refugees themselves were not present at the discussion sessions, nor did they have a voice, strictly speaking, in the elements they sewed together (due to their being marginal).

between the four parts of the map (yet to be completed by the refugees) cuts across the center, both horizontally and vertically. The edges or margins are in the center, where all things converge but also fall apart. In a way, those lines at the heart point out the limits of the engagement process. They are the 'fault lines' in the hands of refugees, who have no clear position in the participation mechanisms and institutions. They are central and marginal, present and absent. The tears literally break up the map and point to the cracks in our social order. They highlight the way a certain disjuncture continues to frame the operations of the interface, even when the aim is to democratically open it up by low-tech means.

In this case, the urban interface invites further critical reflection: Why is this map not a single whole, why is it not finished? The answer takes us back to the definition of interface as a critical zone of disjointed relations between tools, people, and institutions. Eventually, Studio Refugee could not live up to its initial engagement vis-à-vis the map because it dissolved as an organization in the absence of public funding. Centralizing these holes in the system, rather than hiding them, requires further action by policy-makers and project-leaders. If participatory design wants to be democratic, it must open up to the complexities and limits within which it operates. Technologies, people, and difficult frame-jumping must be up for debate.

But this case also illustrates that such an interface may well be capable of opening new horizons and produce all sorts of possible connections in the future, such as with the refugees' sewing work, the food production of many ethnic communities, the recycling in stores selling second-hand items, the commercial furniture production by IKEA, the design efforts by architects, and the exhibitions in local and international cultural institutions. The map has meanwhile been on view in C-Mine in Genk, in Z-33 in Hasselt, and at the Architecture Biennial of Rotterdam.

In fact, this particular project already has had implications for other players in Genk and its surroundings, instigating unforeseen productivity in the region. Since the map (and other design interventions) exposed future intersections, it subsequently gave rise to various other constellations. First of all, Studio Refugee has been replaced by a new textile lab in which the city's social department collaborates with textile designers and marginalized women in weekly

of Hasselt University, on locations imagined on the map. And thirdly, at the policy level, a project proposal is being developed to realize a park with a number of food stations along the track in collaboration with all sorts of large and small players who gradually became involved in the design process.

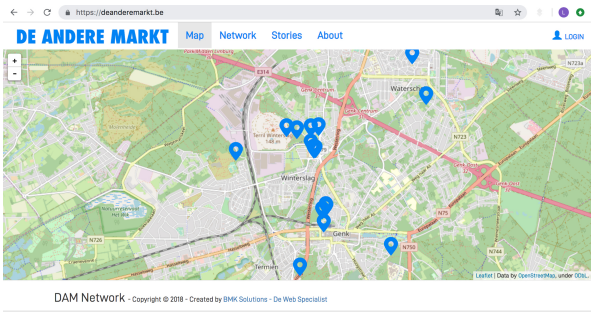

Figure 4: Digital map/interface. Screenshot. 2018. Used with permission.

Finally, and this brings us back to the beginning, some of the configurations that have emerged from *Kolenspoor* have also been visualized on the website of DAM, in the form of a spatial map (see Figure 4), a network visualization, and a story-telling platform. [26] Through a digital interface still under construction, visitors can access the information on DAM's several projects – *Kolenspoor* being only one of them – through three main frames: where are the projects located; which actors are involved; and what local stories have they generated? To stay with our case, *Coal Track* as a project can be found under 'Network,' where it opens up to a visualized network of some of the actors involved; a panel on the right offers a link to a map of Genk on which more actors are located. Clicking the pins on that map, the user is offered short videoclips introducing various people as story-tellers on issues related to the track. All of this information on the track can variously be accessed through 'Map' and 'Stories' as well. DAM's digital interface functions as a dispersive archival and communication tool through which the visitor navigates the various spatial projects in a non-linear, frame-jumping fashion. Gradually the gaps in the configurations are filled as the website is further developed and more links and frames are added. The website intends to bring the groups who are active in the margins to the center. However, it remains to be seen what role this particular interface will play in future city-making plans and how various users or communities will be allowed to reflexively and critically appropriate the design from within the seams.

Conclusion

In this article we have argued that while several approaches to smart cities are possible, only those that highlight the multifaceted dimensions are productive if one wants to go beyond the technological hypes and address the complexities as well. Using Drucker's theory, we have developed a notion of urban interface that involves tools, people, and the larger configurations of institutions. Our discussion of the case in Genk demonstrates how such an interface operates in the context of participatory urban design. The leather map functions as an orientation device for bringing together different actors around the future of Genk, while ensuring enough leeway for reflection, critique, change of strategies, and the design of other scenarios. By approaching the leather map as an interaction between people, technology, and institutions, we are reminded to remain watchful as regards to what or who gets marginalized in the process. Putting the frictions center-stage in the interface design enables us to address these marginalized groups later in the process. To end with the words of Paul Dourish on participatory design in smart cities:

> The widely recognised problems of minority participation in science and technology, both in academia and in industry, speak to problems of seeing technological projects as inherently democratic and inclusive. Using [interfaces] as the tool of urban change may shift but not necessarily open up the sites of power and agency. [27]

Without this protracted vigilance, and without a design through which to articulate the critique, there is nothing intelligent about our smart cities.

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Ginette Verstraete is Professor of Comparative Arts and Media at the Vrije Universiteit Amsterdam. Prior to that she held the Simone de Beauvoir Chair in Contemporary Intellectual History at the University of Amsterdam. She also taught at the University of Maastricht, and was visiting researcher and Professor at various other universities, among which UC Santa Cruz, UC Berkeley, New York University and Open University (GB). Verstraete teaches cultural and media theory and has published books and articles on several topics related to mobility, space, and globalization in art, culture and media. Her recent research addresses the activist discourses in the cultural sector, especially the roles that artists and designers play in the urban Do-It-Yourself democracy. Part of this research is funded by an NWO Grant Smart Culture (2017-20) in a consortium with Design Academy Eindhoven, Studio Ester van de Wiel and the Municipality of Rotterdam.

Liesbeth Huybrechts (1979, Leuven, Belgium) is Associate Professor in the area of Participatory Design, Human-Computer Interaction and spatial transformation processes in the research group Arck, University of Hasselt. She is involved in the Living Lab The Other Market (https://deanderemarkt.be/), a space for reflection and action on the future of work. She is also part of the research projects Traders and Critical Heritage dealing with Participatory Design and (Heritage in) Public Space (Marie Curie ITN, www.tr-aders.eu). Together with Thomas Laureyssens she designed the frequently used participatory mapping tool MAP-it (www.map-it.be). As a freelancer she is active in exhibitions, workshops and writing. In the past, she taught in the Social Design Masters, Design Academy Eindhoven in the Interaction Design Department (LUCA, KULeuven). She co-founded the research group Social Spaces (www.socialspaces.be) exploring the social qualities of design and art.

Notes and References

[1] Marcus Foth, Martin Brynskov and Timo Ojala, eds., *Citizen's Right to the Digital City: Urban Interfaces, Activism, and Placemaking* (Singapore: Springer, 2015).

[3] Vito Albino, Umberto Berardi and Rosa Maria Dangelico, "Smart Cities: Definitions, Dimensions, Performance, and Initiatives," *Journal of Urban Technology* 22, No. 1 (2015): 3–21.

[4] Shannon Mattern, "Mission Control: A History of the Urban Dashboard," *Places Journal*, (March 2015), https://placesjournal.org/article/mission-control-a-history-of-the-urban-dashboard/.

[5] Marcus Foth and Martin Brynskov, "Participatory Action Research for Civic Engagement," in *Civic Media: Technology, Design, Practice*, ed. Eric Gordon and Paul Mihailidis (Cambridge, MA: MIT Press, 2016), 563.

[6] Drew Hemment and Anthony Townsend, eds., *Smart Citizens* (Manchester: FutureEverything, 2013).

[7] Vito Albino, Umberto Berardi and Rosa Maria Dangelico, "Smart Cities: Definitions, Dimensions, and Performance," https://pdfs.semanticscholar.org/656e/4fb0564d96407161d9e541a9ca15375d6c60.pdf, 1732.

[8] Michiel de Lange, "From Real-Time City to Asynchronicity: Exploring the Real-Time Smart City Dashboard," in *Time for Mapping: Cartographic Temporalities*, ed. Sybille Lammes, Chris Perkins, Alex Gekker, Sam Hind, Clancy Wilmott and Daniel Evans (Manchester: Manchester University Press, 2018), 250.

[9] Matt Ratto and Megan Boler, eds., *DIY Citizenship: Critical Making and Social Media* (Cambridge, MA: MIT Press, 2014).

[10] Sophia Maalsen and Sung-Yueh Perng, "Encountering the City at Hacking Events," in *Code and the City*, ed. Rob Kitchin and Sung-Yueh Perng (London and New York, NY: Routledge, 2016), 194.

[11] Thomas Lodato and Carl DiSalvo, "Institutional Constraints: The Forms and Limits of Participatory Design in the Public Realm" (lecture, Participatory Design Conference, University of Hasselt, August 2018).

[12] Many publications on citizen participation in governance take Sherry Arnstein's (1969) famous "ladder of participation" as a starting point. Huybrechts summarizes Arnstein as follows: "Arnstein describes participation as the means

participation. The first degree and the strongest form of participation – involving citizen control, delegated power and partnership – is called 'citizen power.' The second – 'tokenism' – involves placation, consultation and informing. Finally, she refers to therapy and manipulation as 'non-participation.'" See Liesbeth Huybrechts, ed., *Participation is Risky: Approaches to Joint Creative Processes* (Amsterdam: Valiz, 2014), 19; See also Eric Gordon and Paul Mihailidis, eds., *Civic Media: Technology, Design, Practice* (Cambridge, MA: MIT Press, 2016).

[13] Robert Goodspeed, "Smart Cities: Moving beyond Urban Cybernetics to Tackle Wicked Problems," *Cambridge Journal of Regions, Economy and Society* 8, no 1 (2015): 79-92; Martin Brynskov, et al., *Urban Interaction Design: Towards City Making* (Neuhausen: Urban IxD Booksprint, 2014).

[14] Johanna Drucker, "Humanities Approaches to Interface Theory," *Culture Machine* 12 (2011): 1-20.

[15] Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2001), 72.

[16] Alexander R. Galloway, *The Interface Effect* (Cambridge, UK: Polity Press, 2012); Branden Hookway, *Interface* (Cambridge, MA: MIT Press, 2014).

[17] Drucker, "Humanities Approaches to Interface Theory."

[18] Ibid., 5.

[19] Ibid., 4-5.

[20] Ibid., 10; Ibid., 17.

[21] Ibid., 8-9.

[22] DELVA, "Kolenspoor – Genk," accessed November 11, 2018, https://delva.la/projecten/kolenspoor/.

[23] DAM is developed in collaboration with a group of researchers from the LUCA School of Arts and the Faculty of Architecture of Hasselt University. It is co-sponsored by the city of Genk, and the European Union, or, more specifically, the Joint Programming Initiative Urban Europe and Marie Curie ITN (FP7 and, today, Horizon 2020), which stimulates research in the domain of sustainable and

[24] Drucker, “Humanities Approaches to Interface Theory,” 4.

[25] Studio Refugee, Facebook, accessed January 9, 2018, https://www.facebook.com/studiorefugee/.

[26] De Andere Markt, “De Andere Markt.”

[27] Paul Dourish, “The Internet of Urban Things,” in *Code and the City*, ed. Rob Kitchin and Sung-Yueh Perng (London: Routledge, 2016), 45.

Bibliography

Albino, Vito, Umberto Berardi, and Rosa Maria Dangelico. “Smart Cities: Definitions, Dimensions, and Performance.” In Smart Growth: Organizations, Cities and Communities, Proceedings of the 8th International Forum on Knowledge Asset Dynamics, 1723-1738. 2013. https://pdfs.semanticscholar.org/656e/4fb0564d96407161d9e541a9ca15375d6c60.pdf.

Albino, Vito, Umberto Berardi, and Rosa Maria Dangelico. “Smart Cities: Definitions, Dimensions, Performance, and Initiatives.” Journal of Urban Technology 22, No. 1 (2015): 3–21.

Brynskov, Martin, Juan Carlos Carvajal Bermúdez, Manu Fernández, Henrik Korsgaard, Ingrid Mulder, Katarzyna Piskorek, Lea Rekow and Martijn de Waal. Urban Interaction Design: Towards City Making. Neuhausen: Urban IxD Booksprint, 2014.

De Andere Markt. “De Andere Markt.” Accessed November 15, 2018. https://deanderemarkt.be/.

De Lange, Michiel. “From Real-Time City to Asynchronicity: Exploring the Real-Time Smart City Dashboard.” In Time for Mapping: Cartographic Temporalities, edited by Sybille Lammes, Chris Perkins, Alex Gekker, Sam Hind, Clancy Wilmott and Daniel Evans, 238-255. Manchester: Manchester University Press, 2018.

DELVA. “Kolenspoor – Genk.” Accessed November 11, 2018. https://delva.la/projecten/kolenspoor/.

Dourish, Paul. “The Internet of Urban Things.” In Code and the City, edited by Rob Kitchin and Sung-Yueh Perng, 27-48. London: Routledge, 2016.

Foth, Marcus, and Martin Brynskov. “Participatory Action Research for Civic Engagement.” In Civic Media: Technology, Design, Practice, edited by Eric Gordon and Paul Mihailidis, 563-580. Cambridge, MA: MIT Press, 2016.

Foth, Marcus, Martin Brynskov, and Timo Ojala, eds. Citizen’s Right to the Digital City: Urban Interfaces, Activism, and Placemaking. Singapore: Springer, 2015.

Galloway, Alexander R. The Interface Effect. Cambridge, UK: Polity Press, 2012.

Goodspeed, Robert. “Smart Cities: Moving beyond Urban Cybernetics to Tackle Wicked Problems.” Cambridge Journal of Regions, Economy and Society 8, no 1 (2015): 79-92.

Gordon, Eric, and Paul Mihailidis, eds. Civic Media: Technology, Design, Practice. Cambridge, MA: MIT Press, 2016.

Hemment, Drew, and Anthony Townsend, eds. Smart Citizens. Manchester: FutureEverything, 2013.

Hookway, Branden. Interface. Cambridge, MA: MIT Press, 2014.

Huybrechts, Liesbeth, ed. Participation is Risky: Approaches to Joint Creative Processes. Amsterdam: Valiz, 2014.

Lodato, Thomas, and Carl DiSalvo. “Institutional Constraints: The Forms and Limits of Participatory Design in the Public Realm.” Lecture at the Participatory Design Conference, University of Hasselt, August 2018.

Maalsen, Sophia, and Sung-Yueh Perng. “Encountering the City at Hacking Events.” In Code and the City, edited by Rob Kitchin and Sung-Yueh Perng, 190-199. London and New York, NY: Routledge, 2016.

Mahizhnan, Arun. “Smart Cities: The Singapore Case.” Cities 16, No. 1 (1999): 13-18.

Manovich, Lev. The Language of New Media. Cambridge, MA: MIT Press, 2001.

Mattern, Shannon. “Mission Control: A History of the Urban Dashboard.” Places Journal, (March 2015). https://placesjournal.org/article/mission-control-a-history-of-the-urban-dashboard/.

Studio Refugee. Facebook. Accessed January 9, 2018. https://www.facebook.com/studiorefugee/.

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Lanfranco Aceti is known for his social activism and extensive career as artist, curator, and academic. He is a research affiliate and visiting professor at ACT @ Massachusetts Institute of Technology and director of the Arts Administration Program at Boston University. He is also the Editor in Chief of the Leonardo Electronic Almanac, The MIT Press. He has exhibited numerous personal projects including Car Park, a public performance in the UK at the John Hansard Gallery; Who The People?, an installation artwork acquired in its entirety by the Chetham's Library and Museum in Manchester; Sowing and Reaping, installation artworks acquired in their entirety by the National Museum of Contemporary Art of Cyprus; and Hope Coming On, a site-specific choral performance he designed for the Museum of Fine Arts, Boston, with the collaboration of the Boston Children's Chorus, and realized in front of Turner's Slave Ship (Slavers Throwing Overboard the Dead and Dying, Typhoon Coming On). In 2017, Aceti prepared a series of new artworks for an exhibition entitled Shimmer and curated by Irini Papadimitriou (V&A) at the Tobazi Mansion in Hydra, a new large choral performance titled Accursed for the Thessaloniki Biennial in Greece; and Knock, Knock, Knocking a public space installation in the Mediterranean Garden Pavilion of the New Sea Waterfront of Thessaloniki.

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