Genealogies of Livability:
Cosmopolitan Public Space and Urban Nature from the Gründerzeit to the Smart City

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Introduction

This report, produced as part of the Austria Marshall Plan Foundation Doctoral Fellowship, presents partial findings from of research piloted in the first half of 2019. These excerpts will form the basis of a larger project that aims to build a genealogy of circulation and enclosure across domains of urban design and nation-state territorialization. This begins by presenting contemporary debates about the relationship between the smart city and sustainable development agendas, and the increasing importance of public space and urban nature in the "global digital age" that emerges over the course of the 20th century. As a point of entry, this first section considers the case of Aspern Smart City Research and the new Aspern Seestadt development on the outskirts of Vienna.

A second section aims to provide a historical context to the agenda of the global smart city, presenting the process of territorialization and the formation of the nation state as a framework for understanding processes of urbanization, the production of public space and the construction of nature. It then examines how this played out in terms of the urban-ecological development of Viennese Danube over the course of the 18th and 19th centuries. A third section examines the relationship between the regulation of the Danube and the development of the Ringstrasse in the context of the Austro-hungarian *Ausgleich*. This new socio-ecological landscape is considered in relation to Ringstrasse critic Camillo Sitte's views the role of nature in his critique of the modern city. A second half of this section considers the relationship between public space and urban nature in the work of Otto Wagner, who further intensified the regulation of the Donaukanal as part of his designs for the Stadtbahn system. As architectural historians have noted, this a late career transformation for Wagner provided an important framework for the development of architectural modernism, especially articulated in his treatise on the "infinite city." These excerpts are meant to set up a more extensive genealogy of ideas of urban nature, public space, and internationalism from the development of architectural modernism to the smart city and urban sustainability.

Additional research conducted during the research fellowship included Otto Neurath and Adolf Loos' study of the Siedler Bewegung, the development of the Museum of Economy and Society, and ISOTYPE as a system of universal communication that foreshadows the development of the graphical user interface (Terranova 2015). This is contrasted to the geopolitical framework of

racial conflict extending into the earth's atmosphere, reflected in the development of Vienna's Flaktrüm as precursors to urban resiliency and smart city initiatives. With Cold War détente, new international institutions like the United Nations and the International Institute for Applied Systems Analysis heralded the beginning of an era of planetary environmental governance, manifesting on the urban scale with the emerging of environmental design. In particular, Victor Gruen's Zentrum für Umweltplannung and advocacy for the creation of the Donauinsel as a multi-use infrastructure reflects the rise of the "user" and contemporary notions of urban livability. The subsequent post-fordist development of the Donau City embodies the fruition of the global-digital city, and the techno-optimism accelerated through the economic liberalization of EU integration (Seiss, Achleitner, and Kühn 2013). In building out this genealogy of livability in Vienna's urban landscape, this research will provide a historical basis for the emergence of the smart city and sustainable urbanism, as well as a framework for interpreting urban landscapes as part of a socio-natural metabolic process.

Public Space and Urban Nature in the Smart City

"With a world population of more than 8 billion people, and over 70% of these people living in cities, and partly already in megacities, a smart energy solution for maintaining supply to metropolitan areas represents a major challenge for the future. The goal? To use energy more efficiently, with an optimal security supply and economical use of resources without reducing user comfort."

"The goal is ambitious, using new technological measure to ensure better energy efficiency without reducing the comfort level of the occupants. This should be implemented with a positive cost/benefit ratio, at the same time reducing CO2 so that cities continue to be attractive places for living in the future. ACSR is testing these criteria in one of the largest and most unique real demo sites in Europe. In Aspern, Vienna's urban lakeside, practical results are being delivered, ensuring a positive and reliable future for smart energy undertakings."

-Aspern Smart City Research Promotional Video

With dynamic aerial shots cutting through the London fog and panning to the new city of Aspern on the outskirts of Vienna, the promotional video for Aspern Smart City Research (ASCR) reflects the ways in which the smart city is a de facto global city, operating across scales of neighborhood, city, state, and the planetary. Accordingly, this vision articulates a new set of relationships in the production of management of urban space: the integration of four components: Smart Buildings, which Connect to Smart Grids, which are analyzed and optimized by Smart Information Communications Technology (ICT), and the Smart User. The structures of one of Europe's largest "living labs" (Veeckman and van der Graaf 2014; Voytenko et al. 2016), are overlaid onto one of Europe's largest urban development projects; a 20,000 person satellite city at a former airfield on the outskirts of Vienna planned in the late 2000s and currently under construction. In response to the social and environmental challenges presented in the design of a new outlying satellite city, special attention was given to public space and urban green spaces (Knierbein, Madanipour, and Degros 2013). In this respect, the Aspern Seestadt provides an ideal

case through which to examine how the design of urban publics and urban nature emerges from contemporary concern over ecology, sustainability, and global environmental problems.

Emerging from a longer history of sustainable development discourse that began to emerge in the 1970s, the (smart) city as a technological response to planetary-scale environmental challenges stemming from urban sprawl, informal settlements, and global climate change, especially in light of failures of international negotiations (Angelo and Wachsmuth 2019). The smart city as a solution to these problems reflects the assertation of the so-called "urban millennium" or "urban age." Coterminous is what Sassen (2006) called the "global digital age," defined by a tension between the "global space of flows" and the local "space of place," (Castells 2011) with an apparent waning of the nation-state. Terms like reterritorialization and "glocalization" (Swyngedouw 1997) thus emerged to describe how the local became the "site of empowerment in the new global age" (Brenner and Theodore 2005).

This "urban age hypothesis" was most comprehensively critiqued by Brenner and Schmid, who called attention to the arbitrary and shifting definitions of "the urban." In its place, Brenner and Schmid draw on the writings of Henri Lefebvre, who developed a thesis of "total urbanization" in his 1970 book *The Urban Revolution*. Accordingly, rather than identifying a migration to cites, the notion of planetary urbanization presupposes that the entire planet has been urbanized by Cold War military technologies, global capitalism, and the world-historical events of the 20th century. The implications of the planetary urbanization critique are two fold for the purposes of this paper. Firstly, it questions the assumption that cities are the proper venue for addressing ecological issues. Secondly, as many of these urban political ecologists point out, it reflects a shift in modernist ideas about nature and urbanization, typically understood as oppositional, with urbanization resulting from the transformation of nature through technology and labor. In this regard, the planetary urbanization hypothesis complements the notion of planetary-scale computation that underpins the global economy and the networks of the smart city. Additionally, a "total urbanization" calls into questions about the modernist divisions between the human and the non-human, reflected in the figure of the cyborg (Gandy 2005), the notion of "hybridity" of urban nature (Swyngedouw 1996) and the theory of the "Anthropocene," which holds that humans have become actors in the geologic record.

Sociologists have described "new ideologies of nature" found in popular discourse on urban sustainability, co-constituted by complementary visions of "green" and "gray" urban nature. Green urban nature corresponds to "the return of nature to the city," produced through "traditional" urban greening measures like parks and gardens. In contrast, "gray urban nature" concerns high-tech environmental strategies that present "social, technological urban space as inherently sustainable" (Wachsmuth and Angelo 2018, 2019). The open question is how these theoretical insights may transfer to urban design and sustainability research. As Wachsmuth and Angelo note, "a few decades ago, cities were seen as sustainability problems rather than solutions." Indeed, as scholars of urban ecology and ecological design have pointed out, ideas of restricting urban development based on matrices of ecological suitability that began to emerge in the 1970s were predicated on an opposition between nature and the urban, and minimizing the impact of the latter on the former. In the 1980s, the idea of sustainability suggested a notion of harmonious balance in place of zero-sum opposition. By the end of the 1990s, the notion of a balance of nature had widely been discredited in favor of a vision of multiple stable-states, differentiated in their resilience to change and ability to "bounce back" from disturbances. Most recently, the notion of adaptive capacity has further decoupled models of a stable-state of nature, emphasizing that there is no bouncing back but instead constant change and adaptation (Hill 2016). For the purposes of historicizing sustainable development initiatives and the smart city, Lefebve's notion of total urbanization corresponds to frameworks for identifying and addressing matters of global environmental concern formulated in the wake of global decolonization movements, the Club of Rome's *Limits to Growth* and emerging Cold War Détente.

The case of the Seestadt and the brief history of livability presented in the following subsections illustrates how socio-technical transformations associated with information communications technologies have altered not only our ideas of nature but also citizenship in ways that have layered increasing significance on the design of explicitly public space. In this respect, a decline and revival of the public park over the course of the 20th century (Cranz 1989; Cranz and Boland 2004) corresponds to a resurgence of concern about the "death of public space" (Mitchell 2003; Bodnar 2015) accompanying the global urban transformations of the late 20th century. The "death of public space" can also be associated with a wider body of literature on the "splintering" of the public sphere into communities without propinquity by new media technologies (Graham and Marvin 2001; Calhoun 1998; Kitchin and Perng 2016) as information communications technologies

appeared primed to displace public space as a privileged site of civic culture and political formation (Amin 2008), reflective of the decline of the Keynesian social welfare state and perhaps even the Westphalian nation-state itself (Castells 2011; Rose 1996; Brenner et al. 2008).

Towards these ends, Madanipour et al. (2014) address the question of the role of public space in relation to the rapid transformations wrought from deindustrialization, European integration, international migration, economic globalization and climate change. Because a majority of Europeans live in urban areas, the EU 2020 agenda developed after the economic crisis of 2008 can be interpreted as an urban program. The tripartite vision encompasses "smart growth," "sustainable growth," and "inclusive growth," with innovation in high-tech and creative industries seen as a key pathway to these goals. In both techno-scientific and creative industries, innovation is said to draw on a "meeting of the minds," heterogeneity, and diversity that the urban environment and public space in particular can provide. This is reflected in the so-called Lisbon Agenda, which acknowledges the economic importance of urban space. The degree to which public space is actually able to achieve these goals of social inclusion, economic development, and environmental improvement remains to be seen.

In Vienna in particular, Knierbein et al. (2014) describe the "integration in Public Space Report" developed by the Center of Sociology and the TU Wien that emphasizes the "social space analysis" in response to a weakening of labor and housing markets as vehicles of state action for social agendas like integration and inclusion. In addition to aesthetic qualities, the design of public space is increasingly focused on "social intelligence," that takes the needs of various users into account. Social space analysis therefore facilitates the transversal, cross-sectorial nature of public space design and planning in Vienna. Politically, public space serves as a means for connecting between Social-Democrats and Greens parties in the governing coalition (Knierbein et al. idb).

Aspern Smart City Research and the 21ˢᵗ Century Ringstrasse

The Aspern Smart City Research Program is a public private partnership between Siemens AG Austria (44.1%), Wien Energie (29.95%), Wiener Netze (20%), the Vienna Business Agency (4.66%), Wien 3420 Holding GmbH, the firm responsible for the planning and development of the

larger Seestadt Area. While smart city initiatives lay claim to a wide array of technological improvements or "optimizations,"[1] ASCR is specifically focused on energy research; increasing efficiency and reducing carbon emissions. This is achieved through the optimization of a "smart grid," a key feature for transitioning to a renewable energy system dependent on multiple, intermittent sources across a decentralized network rather than a centralized grid of the conventional fossil fuel or nuclear energy system. As mentioned in the previous section, in addition to the smart grid, are experiments with "smart buildings" and behavioral research with "smart users." Developed over 2014 and 2015, the project is focused on three buildings in the Aspern Seestadt, with 111 volunteer users generating some 1.2 million data points as of the summer of 2019. This data, including outputs from the decentralized smart grid, user data, external data like weather and building data, are then analyzed by, and used to improve, proprietary Siemans software, "smart ICT."

In this sense, ACSR reflects a new urban subjectivity emerging with the rise of the smart city. As part of a "living lab," the Smart User becomes an improved ecological citizen of the smart city; not merely a customer, but a productive force, generating data that propels the project forward. The apparatus for developing the smart user are various "smart home solutions" from Siemens, like "ECO-button" that cut off all power from the grid except fridge, and an ACSR Smart User mobile app that displays energy consumption in 15 minutes intervals. This app allows users to give feedback to Siemens, which along with user data such as financial records, education levels, employment status, as well as ambient household measurements like co_2 concentration, humidity, temperature, allow for a more fine-grained model for forecasting energy use than traditional metering. For example, results have shown a diminished weekday noon-time peak, which researchers attribute to women working outside the house. However, despite this robust monitoring and feedback system, modifying user behavior via "energy saving tips," incentives, and app updates about peak changes, ASCR researchers have not been able to induce the behavior changes they had hoped for.

Nevertheless, as a "living lab" or a "test-bed city," data produced in the ACSR experiment is a valuable commodity. As media scholars Halpern et al. described in their study of Songdo, the

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[1] Aspern is subject of a number of other Siemens smart city experiments, including an autonomous electric shuttle bus around the Seestadt that includes a network of embedded sesnors.

South Korean Smart City, sustainability functions as a narrative twin to bandwidth. Data production and analysis, in its potential to reduce resource consumption, justifies investment in research and growth. In the living lab, the datafication of the environment build a future out of an image of the past. A key question for observers of the smart city is thus the ways this new approach constellation of citizens, planners, algorithms, and computer programmers, generate new kinds of political subjectivities as they contribute to a more responsive urban environment (Picon 2018; Halpern et al. 2013). Because of the multiple and equally valid sources of data, in the smart city, and contemporary digital culture more broadly, their definition expands from merely reflecting truth to nature in an external world to potentially incorporate the emotional, affective, and informal. This dynamic is underscored in ACSR researcher's aim to increase efficiency while maintaining user comfort.

In this respect, a clear parallel emerges with the goals of the Smart City and a renewed emphasis on public space and specific imaginaries of urban lifestyles that remains underexplored in heretofore literature. This is implicit in the notion of "gray urban nature" and that cities and dense urban living are inherently sustainable, and therefore an integral part of technological solution to global environmental problems. This is also illustrated explicitly in the ACSR promotional video, where the goal of maintaining cities as "attractive places for living in the future" is narrated over an aerial image of a populated but not overly crowded London park, cutting to the newly planted trees and bright Fermob furniture in Vienna's "urban lakeside." This focus on urban living and urban quality of life as a response to planetary urban problems is manifested in the Seestadt masterplan, which emphasizes public space as a "decisive" and "feel-good" factor for recruiting new residents to the outlying satellite city. [2]

Seestadt claims to be "50% public space" including the two main parks, roads, footpaths cycleways, parks, and green spaces. Conceived as a "city-within-a-city," in the masterplan laid out by Swedish firm Tovatt Architects & Planners and approved in 2007, Wien 3420 Holding GmbH

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[2] Public Space, but also cosmopolitanism communicated in the slogan "Leben in Wien, Arbeiten in Europa," Bitcoin ATMs, streets named after women, and reflected in a closing image of the ASCR video featuring a "Willkommen in der Seestadt" in a variety of languages including English, Turkish, French, Russian, Arabic, Portuguese, Spanish. Knierbein et al. (2014) critique aspects of this as "culturally biased branding" in the hopes of attracting "affluent service economy urbanites." In this sense, "spatial intelligence" also corresponds to the ways in which public space has emerged as a sphere for new niches of "territorial capital accumulation in the post-Fordist urban economy."

aimed to create an "autarktic" city of short distances, in terms of living, and working, education, shopping and leisure. Aiming for "naturally green with an urban vibe for a perfect work-life balance," planners see the function of public space not merely limited to leisure and recreation, but crucial for "mobility, commerce, and culture." Towards these ends, they commissioned Danish public space consultancy Gehl Architects to develop a specific public realm plan to drive the overall urban design of the modern business hub with 20,000 residents and jobs by 2028. Reflecting the importance of the public realm in making cities attractive places for living, as a departure point, Gehl imagines public space as "valuable good," (*Kostbares Gut*) around which buildings should be designed, not visa versa. Citing a gradual withdrawal from public spaces as a result of socio-technical changes stemming from the automobile and modernist functional planning, Gehl argues that high quality public spaces are necessary to draw people into the public realm. Passive and active uses must therefore be designed for through landscape architecture and urban design, or staged, to create a sense of collective life that makes dense urban living appealing.

For Jan Gehl, who rose to international prominence after his involvement in the pedestrianization of central Copenhagen in the late 1970s, the Aspern project appears somewhat unique, given the long time scale and blank slate development. Gehl is particularly known for it's quantitative "public life studies" which survey movement of people through existing public spaces as a base data set against which they can then analyze subsequent temporary, experimental design interventions. In Aspern, they therefore aimed to develop a set of principles for a flexible and robust plan that can respond to change, using the concept of a "score of public space" to frame the spaces between buildings as elements in a musical composition.[3] A core element of this score is a circular "21st century Ringstrasse." Even though there is no medieval core as in Vienna's central Ringstrasse, the Seestadt's 21st century Ringstrasse is not decorative but functional, as it "makes urban life" by connecting different kinds of public space and different thematic neighborhood identities. Thus, Seesatdt's Ringstrasse is more than merely a circulatory corridor but a vital space of urban livability. Practically, this is achieved by multi-use programming for passive leisure and recreation and active events, identifying potential conflicts, and designing for contingency (Gehl: 16).

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[3] For historians of landscape architecture, the notion of public space as a "score" conjures images of the 1970s experimental collaborations between landscape architect Lawrence Halprin and his spouse, the modern dancer Ana Halprin. See "The Rise of Flexible Space" in Ivers (2018).

Additionally, the Seestadt Ringstrasse is bisected by three thematic corridors or "chords" in keeping with the musical concept, seeking to capitalize on Vienna's historical status as a center of *Hauptkultur*. An "urban lifestyle and shopping" chord is color coded with red accents on street furniture, while blue and green chords designate waterways and a network of green spaces and a greenbelt, providing ecological and recreational connectivity connecting to the Lobau, an urban portion of the larger Danube Wetlands National Park that extends to the Slovakian border. However the development of the Seestadt concerns more than strictly ecological connectivity, but also intensifying an economic link with the greater Vienna-Bratislava and the historic center of Vienna following EU integration (Knierbein, Madanipour, and Degros 2013). Like the Seestadt development itself, the Lobau National park is the result of European Union financing made available following Austria's entrance in the European Union in 1995, closing out two decades of Austro-Keynsianism that began to fade with the opening of Austria's borders to Hungary, Slovakia, and the Czech Republic after 1989. In this sense, a disjuncture emerges, juxtaposed against the adjacent Opel factory and the *Zwsichenstadt* sprawl of the larger Donaustadt, where the frontier of post-war urban development meets remnant agricultural landscapes. The urbanism of the high-tech Seestadt, advertised as "*Leben in Wien, Arbeiten in Europa,*" presents the aspirations of the ecological global city, where green and gray technologies, provide a remedy to the shortcomings of earlier urban forms and lifeways.

While it contains a mix of uses, outside the dense norther zone, the plan continues a logic of functional separation, with housing concentrated in the west, research and education in the south, and commercial in the east (Knierbein et al 2013). While Knierbein et al (idb) critique Gehl's insufficient attention to the social dimension, the plan nonetheless reflects an embrace of complexity and flexibility in a turn towards increased reliance on spatial analysis in public space planning. Moreover, across these smart grids, biodiversity assessments, and metrics for cosmopolitan livability, we can identify norms and forms for what Saskia Sassen dubbed a "global digital" society." For Gilles Deleuze, the notion of flows, "everywhere surfing has already replaced the older sports," expressed the seeming breakdown of the "old societies of sovereignty," and the ways in which the mass/individual pair had given way to numerical "'dividuals," subjects of databanks rather than

nation-states. As Halpern argued, in contrasting the enclosure of the factory, in the Smart City, value is produced in the open circulation of data, collective public life, and ecological connectivity.[4]

Since at least 2016, the economic consensus that underpins the smart global city has come into question, described by Castell's as a tension between the global "spaces of flows" and local "spaces of place" (Castells 2018). Transposing this metaphor of interplay between flows and enclosure to the question of urban design, in their proposal for Gehl Cites the architect Christopher Alexander, observation in this 1977 *A Pattern Language*, that "if the edge fails, the space never becomes lively." The Danaustadt speaks to a particular convergence of flows and enclosures in the history of Vienna. As Knierbein et al 2014 describe, to many residents of the western side of the Danube where the historical center of the city is located, the Transdanubian reflects an "unknown eastern territory," where the overall material quality of public space is significantly lower. This research report seeks to tease out the historical interplay between enclosure and circulation in order to better understand both the processes of urban metabolism that give form to Vienna, the Donaustadt, and the Seestadt, and what is at stake more generally in the success or failure of the green/gray infrastructures of the sustainable city.

Optimization, Livability and Urbanization as Planetary Circulation

The partitioning of the earth between the land and sea established a fundamental distinction between a enclosure of territorial sovereignty and the oceanic spaces of circulation. In Carl Schmitt's geopolitical reading of Thomas Hobbes, the division of the European subcontinent according to the principles of territorial sovereignty emerged following the opening of the "New World" as an abstract space, a blank slate upon which European powers could displace conflict and the need for growth. The social contract and the "civilization of war" depended on principles such as amity lines, such as the Treaty of Tordesillas, which divided the new world between the Spanish and Portuguese, and the maintenance of the law of the seas that ensured a measure of free trade and mobility (Legg

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[4] One might argue that Halpern, in making this contrast, overlooks the implications of the "global assembly line" and "just-in-time-manufacturing." This point aside, an emerging global division of labor nonetheless corresponds to the renewed emphasis on public space in the smart city.

2011; Schmitt 2006; Adams 2018). Geographers and architectural historians have also argued that the rise of mercantilism and early forms of capitalism facilitated the abstraction of space and construction of open spaces of circulation within processes of urbanization, which may be considered a "maritimization of land" as naval technologies provided important tools for measuring, abstracting, and controlling territory according to rational principles that came to underpin the Enlightenment (Elden 2010). As the architectural historian Ross Adams suggests, Hobbes draws on recent discovery of blood circulation as a framework for the administration of the commonwealth in the Leviathan, where the body of the Sovereign composed of the multitudes desire for protection, draws on the mechanics of circulation to maintain vitality in its subjects.

In terms of enacting corridors of circulation within processes of territorialization, the most famous of these was likely Colbert's administration of France, which utilized new cartographic and statistical techniques to know and rule over the territory. Military engineers like Sébastien Le Prestre de Vauban developed new knowledge practices that broke with classical notions of architecture. Rather than reproduce Renaissance interpretations of classical types and forms, engineers translated the landscape of the territory into an inventory of resources, an abstract as space to be "perfected," through the construction of new geometric forms, arteries, and enclosures as part the metabolic process of urbanization. Moreover, for Vauban, fortifications placed strategically in the landscape according to these geometric principles provided the security and stability that would allow the construction of standardized infrastructure networks like canals and roadways throughout the territory. In this respect, the state constructed (enclosed) territory as form of knowledge and an interior space of circulatory control. This partitioning of the earth according to principles of sovereignty hailed the obsolescence of the walled medieval city in favor of a network of circulatory infrastructures.

In France, landscape gardeners like André le Notre translated the geometrical forms and engineering techniques deployed by Vaubaun in securing the territory into the new spaces of the expanding city and Royal gardens at estates like Vaux le-Vicomte and Versailles. From the perspective of Vienna, the notion of territory as it emerged in France following the Peace of Westphalia, diminished the power of the Hapsburgs and the Holy Roman Empire relative to its the quasi-autonomous Imperial states, which were free to break from the Catholic Church. While Louis IX was building Versailles, Vienna's strategic location on the Danube rendered it vulnerable to Turkish raids, culminating in the 1683 Battle of Vienna and concluding with the 1699 Treaty of Karlovitz. Thus, in the case of Austria, territorial sovereignty was constructed in relation to

centuries of incursion by the Ottoman Empire, repelled with the support of the Holy Alliance. This enclosure - a secure eastern frontier - allowed for more permanent settlement outside the medieval fortifications. A new outer wall, the Linien Wall, was less important as militarily as fiscally, controlling the flows of energy, currency, and people into the city. A secure territory made possible the proliferation of baroque estates, such as Schönbrunn and the Belvedere. Science and technology permitted the state to regulate "unruly landscapes" such as the Danube's whirlpools in the 1750s, beginning a reconfiguration of the river into a piece of infrastructure that foreshadowed the arrival of the rail in the 1830s, which mechanized the metabolic relationship between the Moravian coal fields and the urban center (Michlmayr 2005; Winiwarter, Schmid, and Dressel 2013).

Efforts by the state to regulate the circulation of energy through the territory reflects the ways in which a modern type of *normalization* unfolds with modernization over the course of the 19th century (Crary 1992). Like aspects of the case of Aspern Smart City Research and Gehl's optimization of public space, normalization is transversal, pertaining to both territory and the population. The historian of science Georges Canguilhem identifies the 1753 Austrian imperial health commission, and its *sanitäts-normative* act as among the earliest examples of this process of normalization (Canguilhem and Savage 2001). Derived from medicine, veterinary, pharmacological, surgical, statistical, and demographic concerns, norms spread a grid of normativity into an expanding range of situations, expressing a demand for rationalization in politics, the economy in the form of industrial mechanization. As Rabinow (1995) documented, the most general value by which these modern norms are justified was through the welfare of the population, understood through the new science of biology, which provided metaphors for a conceptual transfer from physiological functions to the social realm.[5]

Over the course of the 19th century, the notion of milieu came to be understood not only in terms of geometry and geology derived from Newtonian conceptualizations of the fluid mechanics between two central bodies, but also biology and then sociology. Identifying society as a cultural object constructed through these biological metaphors, Rabinow turned to the practice of urbanism, and the "social thinkers, reformers, architects, and engineers, and emperors" who aimed to bring

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[5] Canguilhem is well known for documenting the development of the notion of milleu, its various relationships between the organism, and their general impacts on philosophy. The mechanical ideas of milleu appears with Newton's description of the "fluid" intermediary between two bodies, a fundamentally relative or ambient notion describing the relationship between two central masses. Canguilhem credits Buffon for using Newton's mechanical cosmology to describe the diversity of the earth's living creatures, merging a mechanical and "anthropogeographic" concepts.

norms and forms into a common frame that would produce a desired (healthy efficient, productive) social order. In this way, as industrialization began to transform and normalize the urban landscape, modern urbanism also demonstrated the ability to exploit other previously naturalized elements as subjects of pragmatic knowledge - including the population as a bio-political subject. Following the Napoleonic Wars, the creation of Volksparks, and the deliberate introduction of green spaces in the city as the "lungs of the city" reflects this transfer of biological metaphors in the creation of new forms within an expanding grid of normalization.

For liberals, the operationalization of the notion of milieu in practices of urbanism could correspond not only imperative to improve urban environments for the emerging proletariat, or political expressions of romantic nationalism, but also the ways in which the diversity of earth's climactic zones and its people created a natural system of comparative advantages that inherently leant itself to trade. As Lord Palmerston wrote in advocating for the repeal of the Corn Laws in 1842, the "exchange of commodities" across "natural highways" of rivers and tradewinds was not only inevitable, but beneficial. According to this view, these natural arteries of commerce brought civilization and peace to the world. Along these lines, the Yao (2019) argued the domination of nature served as a test of political legitimacy, exhibited in the further modification of rivers like the Danube over the course of the 19th century – and in particular the failure of lower Danube states like the Ottoman Empire and Russia to adequately dominate the river delta. Moreover, in the context of 19th century nation-state formation, the improvement of landscape infrastructure in pursuit of economic growth and the biological conceptualization of the population framed public health – especially in the context of rapid urbanization – provided a basis for a further transfer of biological ideas to statecraft. Ideas of a *Staatbiologie* and *Lebensraum* attempted to make sense of the ways in which the health of the nation corresponded to the territorial integrity and strength of the state in geopolitical competition with other states (Klinke 2019; Gandy and Jasper 2017).

The following portions of this report present a closer examination of competing political models of circulation and enclosure in the metabolism of the urban landscape of Vienna. It seeks to present how urbanism conceived of Vienna as a socio-ecological assemblage, a city-river interface that modulates enclosure and circulation through the urban system. This entails coupling Camillo Sitte's criticism of the construction of the Ringstrasse, with a consideration of the regulation of the Danube undertaken at the same time. Next, it considers further adaptations to the Danube as part of

Otto Wagner's infrastructure projects at the end of the 19th century, Wagner's theory of the infinite city, and the emergence of architectural modernism. In particular, Wagner's notion of "air centers" and his opposition to the establishment of a green belt, reflect the beginning of a truly planetary, atmospheric conception of urbanism. This contrast between ideas of nature in Sitte and Wagner, in the context of transformation of the Danube, aims to provide a framework a transversal genealogy of the smart city, between the local and the planetary.

Designing the Transdanubia and Modern Vienna

As enlightened absolutists took to reclaiming marshes and wetlands, the Danube emerges as an "uncivilized geography" within the process of territorialization and nation-state formation (Yao 2019) Civilization and reason flowed outwards from Europe, while the lower Danube threatened to "flow backwards" and bring "irrationality to the heart of Europe." From the 18th century onwards, in the eyes of western travelers, the Danube Delta remained a semi-barbaric landscape languishing under Ottoman despotism and Russian backwardness. Around Vienna, a braided river system spanned several kilometers, producing variable and intertwined habitats. Floodplain water bodies connected to the main channel during flood events, making for a dynamic and constantly shifting landscape as land gave way to water, and water gave way to land.[6]

Evidence of attempts to systematically alter the course of the river date to the 14th century, and over the course of the 17th century, the shifting hydromorphology came to produce a tract of land known as the *Unterer Werd* between the primary and a secondary river channel. A series of ad hoc dykes and dams converted this smaller river arm into the *Donaukanal*, as Jews banished from the main city made their homes in the floodprone landscape in the *Unterer Werd* between the canal and the main arm of the Danube. As reflected in the maps created by Daniel Huber in the late 18th

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[6] On the history of the Viennese Danube see Haidvogel 2012; Haidvogl et al. 2013; Gierlinger et al. 2013; Gingrich, Haidvogl, and Krausmann 2012; Hohensinner et al. 2013; Winiwarter, Schmid, and Dressel 2013; Michlmayr 2005.

century, of the city, while the military maintained a glacis around the old medieval city, which the Linienwall circumscribed from 1701, it only ran up to the *Donaukanal*. In this regard, the main arm of the Danube, and the braided river ecosystem beyond, served as a de facto wall, with the *Unterer Werd* occupying a hazardous liminal zone between. These districts, along with the suburban areas within the Linienwall, came to be known as the *Vorstädte*, while the areas outside the Linien wall the *Vororte*.

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The settlement of the *Unterer Werd*e as a liminal zone shows how the Danube's status as an unruly landscape persisted as a natural barrier to the rationality of urban growth and the abstraction of space. In geopolitical terms, this was famously underscored in the Battle of Aspern-Essling of 1809, when the *grand armée* became temporarily stranded on the Lobau island in the wetlands on the east side of the Danube south of Vienna, delivering Napoleon's first defeat in the War of the Fifth Coalition. When the conservative powers sought to grapple with the consequences of the French Revolution and Napoleonic Wars at the 1814-15 Congress of Vienna, a consensus nonetheless supported the liberal establishment of freedom of navigation on rivers like the Rhine and the Danube, leading to the establishment of the world's oldest extant international organizations. In the case of the Rhine, this led to the Central Commission for Navigation of the Rhine in 1816. An international commission on the Danube had to wait for the decisive British victory over Russia in the Crimean War in 1856, though in contrast to the Rhine, the Danube Commission included more than just riparian states, but also Brittan and France, both territorially removed from the watershed.

While the Danube Commission was primarily concerned with the delta, it serves as an important early example of international governance, where an entity, independent of territorial authority, derives legitimacy from scientific consensus and the performance of its function as a seemingly technocratic, apolitical body. Celebrated as "the first 'international executive' to which European powers delegated authority, recognizing "the futility of arbitrary political frontiers not based upon logical economic considerations" (Yao 2019). In this sense, the commission reflected the paradoxical naturalization of liberal ideas of free trade, as it reconfigured the Danube as an international highway for commerce. This reconfiguration was not merely figurative; liberalization and free trade led to a dramatic reconfiguration of the Viennese Danube urban landscape.

Industrial technologies like railroads, first constructed in the 1830s, required stable bridges free from flood threats, while steam boats required higher draft and flat bends, as well as landings on the main Danube Channel as they could not access the Donaukanal (Gierlinger et al. 2013). [7] The social dynamics manifesting in the revolutions of 1848 across the European continent are well known. Economic expansion corresponded to expanding bourgeois landlord and merchant classes, with increasing liberal inclinations, as well as an emerging proletariat. These urban classes, mounting nationalism, and Prussian territorial aggression successively weakened the Monarchy, resulting in the *Ausgleich* of 1867, which established the Austro-Hungarian Empire as a constitutional monarchy. The subsequent abolition of feudal jurisdiction over Vienna thus provided a political framework for the rising liberal bourgeoisie to spatialize civilian claims on the military glacis that ringed the old city. In a period of time known as the *Gründerziet*, the liberal city government famously converted the old fortifications into the Ringstrasse, a landscape showcasing its vision of bourgeois urban citizenship, blending cultural institutions museums, theatres and the opera, consumption in its cafes and shop windows, and symbolic expressions state power.

While Carl Schorske (2012) notes that the military opposed the redevelopment of the glacis until 1857, ceding of the land to processes of urbanization did not correspond to ceding power, but transposing it to new channels. In this case, the urban design of the Ringstrasse accounted for the management of large crowds, which soon took to the public space of the Ringstrassee in political protest, both by providing easy access from nearby arsenals and barracks, and a wide scale that impeded the construction of barricades as in 1848. Through this capacity to manage and secure circulation, the Ringstrasse came to epitomize a new kind of urban public space, superseding the enclosed urban square as a self-consciously modern expression of the liberal public sphere. As Paul Rabinow has shown, modern urbanism came to aim for the transformation of "the socio-natural milieu into a healthy and peaceful environment" in the synthesis of historical and natural elements into the object of the planned city. In particular, this biological understanding of urban society can be seen in the design and regulation of the Ringstrasse as an artery of commerce and transportation around the former medieval core. As Schorkse describes, the Ringstrasse's historicist public buildings float in a "spatial medium whose only stabilizing element is an artery of men in motion,"

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[7] Proposals to channelize the Danube emerged, particularly after large floods as in 1830. However, it was not until an 1862 flood and a second Danube Regulatory Commission finally moved forward with a plan to channelize the Danube Islands, cutting off the main arm.

or the framing of the city's baroque parks, no longer in geometric terms, but, in the words of liberal Mayor Kajetan Felder, as "the lungs of the megalopolis." (Schorske idb.).

Nature and Public Space in Sitte's Critiques of the Ringstrasse

The site of the anonymous urban masses on the Ringstrasse immediately provoked canonical debates and about the proper balance between technology and historical and natural elements that defined the emergence of modernism in architecture (Geretsegger, Peintner, and Pichler 1970; Collins, Sitte, and Collins 2006; Anderson 2018). To critics such as Camillo Sitte, the modernity of the Ringstrasse, constituted by broad streets and wide squares, were fundamentally alienating, artificial spaces prone to induce the neurosis of agoraphobia. In this regard, Sitte denounced "modern geometric planning" for producing fundamentally *un-natural* spaces, in contrast to the medieval city that had developed spontaneously, *in natura.* In his canonical work *City Planning According to Artistic Principles*, Sitte meticulously documented a taxonomy of medieval urban forms as a framework for new urban public spaces. In an appendix, he extends this analysis to urban greenery, identifying similar shortcomings within contemporaneous trends of removing old aristocratic garden walls and designing new parks that are open to traffic and circulation. For Sitte, this defeats the purpose of "sanitary green" spaces, which are to provide tranquil places of enclosure and freedom from dust, wind, street noise, and shade in the summer. In this regard, Sitte foreshadows the enclosed courtyard spaces of the *Gemeindebau* constructed during the "Red Vienna" interwar period.

Sitte specifically bemoans the tree-lined *Alle* epitomized by the Ringstrasse as contrary of the poetic motif of the strategically placed individual tree. In addition to reinforcing the monotony of the geometrically planned modern city, he sees the tree lined *Alle* as a waste of vegetation that would be more effective concentrated in parks as their effects are diminished along the busy traffic artery. Moreover, Sitte points to the maintenance cost of urban trees, using the drainage issues and exposure to adequate sunlight on the Ringstrasse as an example. However, he acknowledges the inevitable need for at least some street trees, given the need to break up the "eternal monotony" of the "endless sea of houses," thereby assisting in wayfinding and providing a coherent image of the city. As an alternative to the *Alle* lined with trees on both sides and to maximize cost at a minimum

effect, Sitte suggests planting only on the sunny side of the street (the north side of east-west streets) and moving carriage and tram circulation corridors to the south side. With this extra space, groups of trees could be planted in larger yards with higher quality soil and drainage, along with shrubbery.

While acknowledging the value of enclosed sanitary green spaces in sheltering city dwellers from the perils of the urban environment, Sitte calls into question supposedly scientific assumptions underpinning emerging modernist understandings of the biological function of urban greenery. Citing his own scientific evidence, he suggests that aside from the physical services of protecting enclosed spaces from sun, dust, wind, and noise, these are primarily psychological functions. Accordingly, he identifies two distinct categories of urban greenery that each serve a completely different set of objectives. While the enclosed sanitary green spaces should aim to create a sanctuary from the city, more architectural, decorative urban greenery should engage with site-specific architecture of the city to produce the necessary poetic sense of place. Reflecting his disdain for the geometric planning, he describes how even a single tree, citing the palms at the Lateran in Rome and olive trees of the Athenian Acropolis, can fulfil this poetic effect. He therefore laments the bushes and creeping vines as "invaluable heirlooms" that fall victim to the town surveyor's T-square.

Sitte's skepticism about the value of urban vegetation is notable for a few reasons. Firstly, it reflects the transition from miasma to germ theory, centering the city at the intersection of a variety of emerging scientific disciplines such as forestry and climatology. Even the preeminent Ringstrasse critic Camillo Sitte acknowledged the improved public walks and gardens were of great hygienic value, constituting one of the truly effective products of modern planning (Collins, Sitte, and Collins 2006).[8] Despite his definitive anti-modernism, Sitte's evocation of scientific truth claims speaks to the broader paradigm shift underway in the development of modern urban design. In his writing, Sitte cites the "tremendous benefits in sanitation" provided by the engineers of the modern city towards public health and the general welfare of the city dweller, evidenced in the halving of mortality rates of European cities. However, he cautions, "it may still be asked whether the price for it need be stripping beauty from our cities." Sitte thus sees the conflict between the utilitarian and the beautiful as irreconcilable, but a problem inherent to all artistic mediums.

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[8] The *Hochquellenleitung* bringing Alpine water to much of the city opened in 1873, facilitating the creation of a water borne sewage system (Gierlinger 2013).

Collins and Collins note that Sitte was particularly interested in applying these principles to land reclaimed from the Danube during channelization undertaken roughly in tandem with the construction of the Ringstrasse. As efforts at converting creeks feeding the Wien river tributary and *Donaukanal* (Winiwarter et al. 2013) yielded results, industrial development increasingly concentrated on the riverine districts to the west and north west of the old city continued to make sanitation issues a major imperative of urban design. The dynamism of the riverine system presented two main challenges to the expansion of the city that precipitated a comprehensive, infrastructure-scale regulation of the urban river. In the first case, flood events were sanitary issues, as they would eject sewage into basements and streets. Secondly, the emerging industrial economy required stability and predictability. However, in addition to preventing floods and stabilizing the shoreline for rail infrastructure, the channelization of the main arm in 1875 opened up 260 new hecatres of land to development, which would be presented on the world stage at the Prater in the Leopoldstadt, chosen as the site of the 1873 World Exhibition. In this regard, much like the speculation for which the Ringstrasse is well known, economic development of these areas came to be seen as a clear driver of channelization, beyond sanitation or even river transport.

Winiwarter (2013) also suggests that while the first Danube Regulation Commission of 1849-1851 considered stopping the discharge of sewage into the Donaukanal as important a goal as the regulation of the main arm, by the time of the second commission in 1868, the focus had shifted towards commercial purposes. At the time of the second commission the Donaukanal was the primary portal to the city for food, and the growing steamship trade prompted engineers to focus on creating a singled excavated channel, envisioning stockyards, landings for ships, and a winter harbor connected to rail to the city center rather than by the canal (Gierlinger 2013). From 1870 to 1875, French machines acquired following the completion of the Suez Canal straightened the river into a 280 meter channel with the Hubertusdamm and a 450-meter inundation zone on the northern side, cutting through the Danube Islands. Access to the Danube Canal, the old arm of the river that separated the *Unterer Werde* from the medieval city was controlled by the *Schwimtor*, a mechanical floating barrier designed to protect the ice and flooding from entering the canal. However, the *Schwimtor* could often become blocked by heavy ice floes, preventing the inflow of water into the Donaukanal and the flushing of sewage from the city. However, it was not until the incorporation of the suburbs in 1892 that a comprehensive regulation of sewage into the Donaukanal outflows via intercepting sewers would be made possible. By this time, rapid urban growth triggered by urban

migration and industrialization triggered a new Generalstadtplan and international competition for a Generalregulierungsplan in 1892.

Nature and Public Space in Wagner's Infinite Metropolis

As mentioned above, following the channelization of the Danube and the development of the military glacis around the medieval core occupied the construction boom of the 1870s, the districts of Briggetau and Leopoldstadt, the *Unterer Werde* floodplain islands to the east of the Donaukanal, emerged as the densest residential quarters and most populous districts in the city. In contrast to 1859, when planning for the Ringstrasse began, officials aimed for a more systematic plan for future urban growth rather than merely redeveloping a discrete urban void. In this context, Otto Wagner, a Ringstrasse architect-developer was commissioned to design a number of core infrastructures. In this second wave of urban restructuring, Wagner's Stadtbahn system, for which he designed more than thirty stations, hinged on the transformation of the Linien wall separating the inner suburbs from the outer suburbs, into the *Gürtel* or Belt Road, and the regulation of the *Donaukanal.* This entailed the design and construction of a lock and wier mediating the flow of water into the Danube canal at Nussdorf, which allowed for the construction of the Stadtbahn along the canal below grade before merging with the artery left by the Linenwall corridor. In the process of designing these infrastructural transformations, Wagner would famously shed his historicist Ringstrasse style and beginning to develop an important basis for architectural modernism. Taking the imperatives of circulation, communication, social and sanitary controls, and land-use differentiation throughout the city as a whole, Wagner dared to use the raw "style of Adam" associated with engineering and rural infrastructures as the basis for a coherent and shared public image of the city.

For Wagner, the task for art was thus to adapt the urban landscape to humanity, ensuring that democratization would lead to a harmonization of social forms. Arguing that "the most important moment in the solution of such a question [of municipal planning] lies in the scrupulous fulfilment of purpose, where form follow function in the realization of the vision that *art must consecrate all that comes into being.*" Negative consequences of urbanization, such as stifling uniformity, could be avoided not by historicism by through the use of monumental compositions, and the

design of "open air centers" that included parks, gardens, and playgrounds, famously depicted in his aerial rendering proposals for the XXI District. In contrast to Sitte, who turned to history to develop a taxonomy of (seemingly) naturally-occurring public spaces centered around Catholic churches, Wagner envisioned new forms of public space exemplified in his Stadtbahn stations. As Schorske describes, for Wagner public spaces and monuments where objects to move *towards* rather than to move *in* as advocated by Sitte. Wagner not only integrated the railway into the existing fabric of the city, but designed the system to unify the old and new city, both in terms of circulation but also providing a modern public physiognomy for Vienna. In this regard, the Stadtbahn, along with the Nussdorf Wier that made it possible, reflected Wagner's application of art and design to the raw infrastructures of the modern city.

In addition to protecting the rail lines from flooding, Wagner's weir was designed as a monumental symbolic gate to the city. Functionally, the Nussdorf dam allowed for a year-round winter harbor, while new bridges and quayside installations for markets extended the public realm of the Ringstrasse. According to Sarnitz (2018), Wagner's work on the Danube canal, including the construction of canal wharfs for markets and the adjacent Stubenviertel were conceived as an urban planning unit; extending the Ringstrasse with the Aspernbrücke, reflecting the new modernist logic of planning oriented around components. By breaking the city into a series of components, he could unite a sprawling metropolis into an efficient unit. Each of these districts would house between 100,000 and 150,000 people spread over 500 to 100,000 hectacres, forming groups of smaller cities around the historic core, each its own public amenities and particular identity following the liberal notion of geographic comparative advantage. For Wagner, the expanding city would provide its own environment, the entire world transforming into a new landscape of city districts, replacing the country side with its clusters of settlements, famously declaring, "there can be no limits to the expansion of the big city if it is to accord with our modern outlook." In this respect, Wagner unabashedly embraced urbanism and modernity, which he saw as inevitable force. Rather than "harking back to tradition" and "picturesqueness," the purpose of art was to accommodate "the modern experience." He eschewed the single family dwelling as incapable of satisfying "popular need" in light of the inevitable shifting economic conditions that provide the dynamic appeal of urban life. The vast majority of city dwellers, he argued, prefer to "vanish in the mass" rather than deal with "gossipy neighbors."

Wagner's works for the Danube Canal and the Stadtbahn were part of a larger modernization of public works completed under the Mayorality of Karl Lueger. A populist founder of the Christian Socialist Party who dabbled in anti-semitism in catering to his constituency of small taxpayers, lower-middle class shopkeepers who had not seen the benefits of liberal largesse. A core feature of Leuger's reform program was providing and communalizing technical infrastructure. All parts of the city were provided with gas, electricity, drinking water, and a new sewage system (Waissenberger and Bisanz 1984). While historians have contradictory interpretations of Wagner's relationship to Lueger[9], historian Eve Blau (1999) highlights the ways in which Wagner's Stadtbahn made all parts of the burgeoning metropolis equally folded into Lueger's populist agenda. The Stadtbahn, like the Nussdorf Wier and Danube Canal, changed the internal rhythms and underlying structure of Vienna, yet without radically altering its appearance.

The modernist rationalism of Wagner's infinite city, described in his 1911 book *Die Großstadt*, left little to no place for romantic nature, converting vegetation into architectural sculpture. In this respect Wagner explicitly opposed a final large-scale planning accomplishment of the Lueger-era – the establishment of the Wald – und Wiesengürtel, a ring of forest and meadowlands that was incorporated into Greater Vienna with the 1890 expansion. The 4,400 hectare greenbelt "air reservoir" included the Wienerwald to the northwest, the Prater Forests and Lobau wetlands to the south east, and the Wienerberg due south (Breiling and Ruland 2008). The institution of the greenbelt thus had the effect of funneling expansion of the City along the rail line that ran along the channelized Danube in Florisdorf on the north bank of the Danube. In his writing, Wagner opposed the greenbelt as a kind of arbitrary restriction on the city's growth. He pointed to the Bois de Boulogne and the Bois de Vincennes as too distant from the city's inhabitants, and inevitably bisected and cut-off by infrastructures, as was the case in both Paris and Vienna, defeating the purpose of a continuous greenbelt. Rather, Wagner argued that the new districts of the expanding city should be furnished with air centers, and a range of other features to support urban life, advancing a vision of modular urbanism that foreshadowed polycentric schemes developed over the 20th century.

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[9] Lefaivre notes that Wagner had many Jewish clients and constructed several synagogues, and describes Wagner as increasingly isolated following the rise of the Christian Socialist Party. Wagner himself praises Lueger in his lectures on *Grossstadt.*

Reflections on Research Stay and Host Institution

It was a great privilege to receive a Austria Marshall Plan Foundation Fellowship. While my PhD research concerned the history of Tempelhof Airport and late 20th century efforts to transform it into a public park space, which involved several years in and out of Germany, I had only spent a few days in Austria. It was therefore a pleasure to get to know the fascinating city, its culture, and history. Because of my teaching obligations at Berkeley, I divided my time into two trips during winter and summer break of 2019. This allowed me to experience Vienna during dramatically different seasons, and I stayed at different locations across the city, including Favoriten, Weissgerber, Neu-Penzig, Briggitenau, and Leopoldstadt. Staying in these diverse parts of the city allowed me to gain a better understanding of Vienna as a multi-national city, a multi-culture in many ways bound together by the Danube. My stay in Vienna, also permitted the opportunity to visit renowned baroque gardens like Belvedere and Schonbrun, and the world class art museums of the Museumquartier. Biking from Aspern Seestadt through the Lobau, I was thus able to observe for myself the ways in which the post-fordist urban form of the Donaustadt reflects what has been described as the *Zwschenstadt,* where a landscape of shopping malls and urban sprawl fills in gaps between previously rural villages and countryside. As the *Gstetten* or fallow, terrain vague, disappears, new kinds of consciously ecological public spaces such as the Donau Insel and the Lobau emerge as sites of urban sociality, such as the Donauinselfest.

I was graciously hosted by Sabine Kniererbein and the Interdisciplinary Center for Public Space and Urban Culture (SKuOR) at the Technisches Universität Wien. This was an ideal affiliation for me, as SkuOr is an internationally renowned center specializing in the study of public space, especially in Europe. SKuOr had recently held a workshop "decolonizing Transdanubia," which aimed to deconstruct the concept of the "Transdanubia" by examining how new urban landscape forms reflected a new relationship between public space and housing. In particulary, they showed how, with new public spaces in the post-fordist urban landscape are increasingly privatized, the private sphere of the home is also reconfigured, increasingly the site of public activity with the increased use of digital social media. In my stay in Vienna, Sabine invited me to tours of new multi-generational housing in the Donaustadt, and to participate in the 10th anniversary celebration of the SKuOR. This included a paddle boarding excursion in the *Alt Donau*, the standing body of water left from the first alignment. Sabine also connected me with Lilli Licka, who has studied the history of

the Donaupark, and recommended *Wer Baut Wien* for a post-cold war history of the Donaustadt. SkuOR's library also contains a highly specialized collection providing a valuable resource in terms of getting oriented to existing studies on public space scholarship on Vienna and globally.

In terms of other collections, during my stay Vienna I was also able to access Wien Architektur Zentrum archives, the TU Wien Bibliothek, The Museum of Society and Economy, the City History Museum, the International Institute for Applied Systems Analysis archives, and private collections of Marcello La Speranza, with whom I was also able to conduct an interview. An archeologist by training, Speranza is the foremost historian of Third Reich Luftschutz in Austria who manages the Flakturm exhibition on the upper level of the Haus des Meeres. I also visited s the Flaktürm in the Augärten, Argenberg Park, as well as foundations of Reichsbahn Flaktrürm in Florisdorf. I documented these sites with my Mavic 2 Drone, after receiving a permit from Austro Control, which required drone insurance which I purchased through the German company Haftpflicht Helden.

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