YVONNE FRANZ and CHRISTIANE HINTERMANN (eds.)

UNRAVELLING COMPLEXITIES UNDERSTANDING PUBLIC SPACES

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Umschlagbild: Urbanität und Lebendigkeit im öffentlichen Raum am Donaukanal, Wien (Foto: Anja Petrovic 2015)

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2. METHODOLOGICAL APPROACHES

2.3 GREAT STREETS FOR THE POST-CARBON AGE

Joshua GRIGSBY and Florian LORENZ







Figure 18: The Carbon Age. In the long-term, a low-energy future similar to our low-energy past is entirely possible. Graphic from oilprice.com, adapted from M. KING HUBBERT, 1974.



Figure 19: Mariahilferstraße. Mariahilferstraße after conversion to a shared space. Photo courtesy of bplusb.nl, 2015.



Figure 20: **1939 World's Fair. Redefining and redesigning streets for the motor vehicle age at the 1939 New York World's Fair.** Photo courtesy of General Motors, 1939.



Figure 21: Great Streets. Allan JACOBS' drawings in Great Streets eschew engineering concerns for the atmosphere of urban public spaces, 1993.



Figure 22: Smarter Than Car's vision for great post-carbon streets, in which a multitude of possibilities combine to meet human needs in human scale and at human speed. A wide variety of mostly human-powered vehicles negotiate their flow amongst pedestrians; building facades generate solar power while mobile small-scale businesses activate the street; canopy trees, green roofs and facades, and permeable pavers reduce the heat island effect and absorb CO2 and water runoff. Figure courtesy of Georg Wieser, 2015.



Figure 23: Ideation to Drawing. With so many ideas to choose from, moving from ideation to drawing to presenting was a challenge. Photos Florian LORENZ, 2016.

2.3 GREAT STREETS FOR THE POST-CARBON AGE

Joshua GRIGSBY, University of Vienna, Department of Geography and Regional Research, and Florian LORENZ, Smarter Than Car

A Road Less Imagined

As climate science continues to improve, the primary role of burning fossil fuels in global warming and climate change becomes ever-clearer. The Industrial Age, powered first by coal in the 17th century and increasingly by oil since the early 20th century, has been referred to by atmospheric chemist Paul Crutzen as the Anthropocene, a separate geologic age distinguished by the dominant influence of human activity on the environment. It has been an era of utter transformation, both enormously beneficial and unfathomably destructive, that is now culminating in a stark but far from simple choice: either invoke the precautionary principle at a global scale and end the fossil fuel era or do nothing as atmospheric CO, levels race past 400 ppm into uncharted territory.

Well, nearly-uncharted territory. Using evidence from our geologic past, scientists can estimate the likely impact of continued global warming. Burning the 5 trillion tons of already-discovered fossil fuel reserves extractable with current technology could increase global mean temperatures by up to 10°C as compared to preindustrial averages (Tokarska et al., 2016). How drastic of a change would that be? Well, the last time the earth was even 6°C warmer, during the late Permian period 250 million years ago, 95% of all life died off (see youtube.com, 2016). As little as a 2°C increase in average global temperatures as compared to preindustrial times (we are currently at approximately 1°C), which is frequently cited in policy documents and popular media as the safe limit for global warming, could lead to sea level rise of up to six meters, displacing hundreds of millions of people. "[C]onflicts arising from forced migrations and economic collapse might make the planet ungovernable, threatening the fabric of civilization" (Hansen et al., 2015). It appears that there is no safe limit for global warming, only increasing levels of risk.

2015's landmark agreement reached by nearly 200 nations at the UNFCCC COP 21 in Paris is a clear indication that political support for decarbonization as an alternative to runaway climate change is growing. To retain a >66 % chance of staying below 2°C, we have an estimated global carbon budget of 590-1,240 GtCO₂ from 2015 (Tokarska et al., 2016). If annual global emissions remain at the current rate of about 40 GtCO₂, this budget will be exceeded in 15-30 years. In other words, we must rapidly diminish our use of fossil fuels, starting today, and effectively decarbonize by mid-century (see Fig. 17, p. 94). This is, in fact, the foundation upon which the Paris Climate Agreement was built. But what are the implications of decarbonization? How will such a transition impact us, globally, regionally, and personally? How will it change our economic and social systems? How will it change our cities?

Energizing Social Practices

"[T]here are almost no activities that presuppose movement that do not now rely on oil," according to sociologist John Urry, "and there are almost no activities that are significant in the modern world that do not entail movement of some kind" (Urry, 2012). Urry wrote extensively about the impact of fossil fuels, particularly oil and what he called the system of automobility, on society in the past, present, and future. "Indeed burning fossil fuels to generate heat, power and movement is the <u>most</u> significant feature of the modern world" (Urry, 2014). Today, oil produces an estimated 95 % of the energy used in transportation, while its byproducts are converted into countless necessities of daily life: plastics, electronics, food preservatives, agricultural pesticides and fertilizers, medicines, deodorants, cosmetics, and shoes, to name but a few. Urry continues: "there is currently no Plan B, no potential system in place which could begin to replace oilbased systems" (Urry, 2012).

A full analysis is beyond the scope of this paper, but while the share of renewable forms of energy generation is increasing, renewables are unlikely to neatly replace fossil fuels because of their generally lower net energy rates, the difficulty of storage and transmission, the resource-intensiveness of reconfiguring electrical grids, and the ironic dependence of most renewable energy technologies on fossil fuels for the extraction of essential rare earths, production of materials, assembly, maintenance, and transportation from the point of manufacture. Instead, the most likely future we face is one of both energy transition and energy descent. The carbon age, powered by fossil fuels, may well be a historical aberration, a one-time energy bubble (see Fig. 18, p. 94).

So, how can we meet the challenges of both climate change and decarbonization with ever less energy? Elizabeth Shove and Gordon Walker provide an important reminder that "...energy is used not for its own sake but as part of, and in the course of, accomplishing social practices" (Shove and Walker, 2014). It is not energy that matters, *per se*, but what we do with energy. If energy is defined as the ability to do work, then

the questions we need to be asking are what work needs to be done, by whom, for whom, how, and to what end.

Reframing the End of an Era

"Better' may now mean 'less'", wrote social philosopher André Gorz more than 35 years ago, "creating as few needs as possible, satisfying them with the smallest possible expenditure of materials, energy, and work, and imposing the least burden on the environment" (Gorz, 1980). To transition away from fossil fuels is to relinquish many of the paths, practices, and paradigms developed over the past several centuries. In other words, high-speed, high-consumption, on-demand, global lifestyles may soon go the way of the dinosaurs. What replaces them is up to us, and knowing that in advance means that we have an opportunity for positive change unprecedented in human history.

The end of the fossil fuel era is an invitation to redefine what it means to progress, and to collectively reorganize contemporary society, "including its transportation system, population distribution and the nature of work and sociability" (Urry, 2014). The world will not stop as it moves away from fossil fuels, but it will certainly change, probably fundamentally. Individual people and entire societies will adopt different ways of making, moving, thinking, and being. The choice we now face is runaway climate change or rapid decarbonization. Whichever path we choose, it will be not only a road less traveled but one scarcely even imagined.

On the Path to Decarbonization

A post-carbon paradigm needs to make the leap from plans and concepts to physical reality as quickly as possible. Cities are emerging as important stakeholders in implementing new policies, practices, and physical plans with the aim of rapid decarbonization. Internationally, a growing number of city-scale initiatives and networks such as C40, 100 Resilient Cities, and the World Bank's Low-Carbon Livable Cities (LC2) Initiative are spearheading efforts toward climate-adapted and low-carbon urban development.

In Vienna, however, no specific strategic planning document exists (yet) for rapid decarbonization. Numerous strategies for preventing and reducing greenhouse gas (GHG) emissions are spread across multiple sectors and administrative units, often in an ancillary capacity, and so Vienna's *de facto* policy framework related to decarbonization must be pieced together by assembling selections of various documents Of principal relevance to this workshop are the Smart City Vienna Framework Strategy, Urban

Development Plan (STEP) 2025, and the thematic concepts attached to STEP 2025 such as the Vienna Urban Mobility Plan and the Urban and Green Spaces Plan.

Smart City Vienna Framework Strategy

Vienna's smart city approach is refreshingly atypical, with a three-pillar foundation that goes beyond mere technophilia: (1) Radical resource preservation; (2) Development and productive use of innovations/new technologies; (3) High and socially balanced quality of life. The Smart City Framework Strategy (wien.gv.at, 2016) combines established European Union goals with its own ambitious targets, such as reducing GHG emissions by 80-95 % by 2050 (compared to 1990 levels) and increasing the share of renewable energy to 50 % by 2050.

The city aims to cut the mode-share of motorized individual traffic (MIT) from its current 28 % to 15 % by 2030 and significantly less than 15 % by 2050, by which time traditional combustion engines are to be effectively phased out. Some of that traffic is expected to be replaced by electric cars and new propulsion technologies, but the emphasis is on changing travel practices by prioritizing public transport, walking, and cycling.

Urban Development Plan (STEP) 2025

Though not explicitly focused on decarbonization, STEP 2025 (wien.gv.at, 2016) provides provides a strong policy background. The realization of selected principles, targets, and strategies would greatly assist in decarbonization while radically transforming urban public spaces in Vienna.

The key principle of "A Livable City" calls for "mixed, vibrant neighborhoods with streets and squares as well as meeting areas with vibrant ground floors" and seeks to maintain and create "high-quality open and green spaces" which "are of vital necessity for recreation, leisure and ecological diversity". The document defines the provision of robust infrastructure for "humane and environmentally sound transport" as a public responsibility and emphasizes the city's commitment to "a priority position of public transport, pedestrians, and bicycle traffic in the common environmental network".

STEP 2025 prioritizes urban greenery over air conditioning as a strategy for adapting to urban climate change. Combined climate protection and adaptation are seen as an "integral component in the development of urban quarters and open spaces", with "greened streets" to be "developed into the leading type of open space axis". The plan is for streets to be (re)developed into public spaces by "improving [their] quality as a place where people want to spend time and creating more space for diverse uses". This

should be accomplished, in part, by "creating a dense and attractive network of walking and cycling paths" for the "city of short distances".

STEP 2025 Thematic Concepts

Thematic concepts introduced in STEP 2025 are further elaborated in dedicated documents. The Urban and Green Spaces Plan (wien.gv.at, 2016) outlines a network of continuous green spaces throughout Vienna similar to Hamburg's *Grünes Netz*, the intention of which is to make it possible for people to get from any point in the city to any other without leaving green spaces. *Zweier-Linie*, the street chosen as the summer school workshop's project site (discussed in more detail below) is expected to be part of this network.

The Vienna Urban Mobility Plan (wien.gv.at, 2016) follows the concept of a Sustainable Urban Mobility Plan (SUMP) as set out by the European Commission. It features nine fields of action, of which two – "Public Spaces: Sharing Streets in a Fair Way" and "Transport Infrastructure" – are especially relevant for the redefinition of streetscapes. The document puts forward a significant reduction in MIT and identifies the potential benefits of converting on-street parking spaces to more varied and accessible types of public space. The incongruity of the current allocation of urban space (67 % of street space is designed for motor vehicles, which account for only 28 % of trips) with goals of improving public space and decarbonizing traffic and transport is clearly noted.

From Plans to Physical Spaces and Daily Practices

Vienna, like most cities, had its love affair with the car. But judging from current policy documents and urban redevelopment projects, this romance seems to have run its course. The beginning of the end was probably the re-pedestrianization of *Kärntner Straße* and *Graben*, two of the main shopping streets in Vienna's city center, as well as the iconic Stephansplatz, back in the early 1970s. Thanks to intense lobbying and strong political will, former public spaces that had been given over to the car have been steadily reclaimed.

The most recent major example is the redesign of *Mariahilferstraße*, the busiest shopping street in Austria and now the longest shared space in Europe (see Fig. 19, p. 95). A pet project of the Green Party, it is the most prominent example of local urban development that reduces space allocated for MIT in favor of creating streets that welcome walking, cycling, and slow or stationary uses. The idea is simply that urban streets should function, first, as urban public spaces. For growing cities like Vienna, the rising pressure on public spaces makes such projects vital.

At the same time, the city needs to deal with an increasing demand for transport by that same growing population. In response, it has reduced the cost of public transportation and is making walking and cycling more feasible and attractive. All three can work well in their intermodal combination, consume far less space than cars, and render public spaces more vibrant, safe, and productive simply by activating them. For at least the next decade Vienna will continue to expand and better connect its subway network while redeveloping public spaces along the planned new subway lines U2 and U5. *Zweier-Linie* features two subway stops (*Frankhplatz/Altes AKH* and *Rathaus*) that will be built or renovated by the year 2023.

Yet, when strolling along the workshop project site with its still-heavy and fast car traffic, it is evident that Vienna will have to imagine very different types of streets if it wants to implement the policy targets put forward by its own strategic documents.

Streets

Climate change and decarbonization are global challenges, and thus beyond the scope of urban planning alone to solve. Yet they are challenges cities must prepare themselves to meet. How will cities reduce the heat island effect, protect against extreme weather events and changing weather patterns, reduce air pollution exacerbated by rising temperatures, provide sufficient food and potable water, and maintain vital ecosystem services and goods? How will they adapt to declining total and net energy, diminishing global flows of goods and services, and reduced individual mobility, generally?

The greatest opportunity for large scale physical intervention is in public space, which can be transformed by a single (albeit multifaceted) actor, and particularly in streets, which comprise the majority of urban public space. Streets, as Jane Jacobs famously wrote, are "the main public places of a city...its most vital organs" (Jacobs, 1961). The automotive industry recognized this back in the 1920s, when frequent protests sought to ban cars from cities or otherwise limit their role. Motordom, as the industry billed itself, presented the private automobile as the symbol *par excellence* of freedom through speed and progress through technical engineering; it wasn't until streets were redefined and redesigned according the logic of motor vehicles that the automobile became the dominant mode of transportation (Norton, 2002) (see Fig. 20, p.95).

Streets are semiotic constructions; their design is never neutral. With so many demands on limited space, the design of a street must by necessity prioritize certain activities over others and even suggest where and how those activities should occur. By doing so, a street materially manifests the values of its makers. "In essence," wrote

Alain de Botton, "what works of design and architecture talk to us about is the kind of life that would most appropriately unfold within and around them. [They] hold out an invitation for us to be specific sorts of people" (De Botton, 2007). Who, then, do we want to be at the dawn of the post-carbon age? What sort of social practices should streets invite? What sort of urbanity and mobility should they foster and which societal challenges should they address? How might we describe and design great streets for the post-carbon era?

Great Streets

We begin with Allan Jacobs, who in his seminal work *Great Streets* makes the obvious but profound observation that "some streets are better than others: to be on, to do what you came to do" (Jacobs, 1993). Great Streets, for Jacobs, are ones that help make community. They are open to many different types of people and activities and they are desirable places to be. People choose to spend time on great streets whether they need to or not. Great streets are physically comfortable, with protection against the elements. They encourage participation and social interaction. Great streets are memorable. They are also representative, among the best of their type, and always seem imbued with some inexplicable magic, a subtle alchemy. But Jacobs was not simply waxing philosophical. He was concerned with the physical, designable aspects of streets: width-height ratios, plinths, street furniture, trees, signage, materiality (see Fig. 21, p. 96). There are decipherable reasons why some streets are better than others.

Urban mobility is contextualized locomotion; that is, the movement of people and goods in a city happens in relation to physical spaces, perceived places, social practices, and a complex set of dynamic macro-, meso-, and micro-level conditions. The design challenge of post-carbon urban mobility, then, is to facilitate the mobility needs of people while inviting the production of urbanity and enhancing adaptive capacity in the face of systemic change. In practice, this means rejecting the monolithic car-based system in urban areas in favor of redesigning streets, parking areas, and networks of streets so that the greatest proportion of city dwellers can maintain a high quality of life even as energetic, economic, and environmental conditions shift. The criteria that Jacobs used for distinguishing great streets are rooted in a view of urbanity that should remain applicable in the post-carbon age, but new criteria are also needed given the new context.

Great Streets for the Post-Carbon Era

Decarbonization will almost certainly reduce overall energy use, global flows of goods and services, and individual mobility, leading to an increase in non-technical solutions to everyday problems, local production of goods and services, and the use of

human-powered transport modes. The redefinition and redesign of streets has much to contribute to engaging these challenges.

As discussed above, the demands on streets are legion. Streets should support the flow of people, services, and goods while providing memorable and meaningful public spaces. They should play a central role in protecting against the undesirable effects of climate change. And streets should contribute to the collective production of food, essential goods, and social cohesion.

But how to achieve this on the streets of the post-carbon age? Smarter Than Car is putting forward three criteria for post-carbon streets that are vital in making decarbonization a constructive and beneficial process (see Fig. 22, p. 96).

Negotiated Flow

Negotiated flow is an organizational principle for urban traffic that allows for an efficient and safe use of space without relying on the separation of transport modes. Instead of an elaborate and energy intensive engineering approach to mediating between traffic participants, negotiated flow uses immediate human interaction. The constant encounter and negotiation between people slows down traffic without external guidance and thereby leads to increased road safety while improving the route efficiency of individual mobility and the ability of streets to function as public space. Negotiated flow is how large volumes of pedestrian traffic manage to keep moving without people running into one another. It is the principle at work in shared space, but applied on a system-wide scale.

Productive Activation

Productive activation is an urban strategy for policy, management, planning, and design that seeks to bring communitarian, agrarian, cultural, and economic productivity back into the public space of cities. The strategy defines public spaces as urban commons that are to be used by communities for various productive uses, from urban farming to social interaction. It stands in contrast to the consumption-heavy activation of many urban streets today, and is especially relevant for the transformation of streets into multifaceted public spaces.

Radical Greening

Radical greening refers to the maximization of living urban systems in a city, specifically photosynthetically active plants such as trees, for the primary purpose of climate change mitigation and adaptation. Typically "gray" spaces such as street surfaces, the airspace above streets, hardscaped plazas, building facades, courtyards,

and rooftops have extraordinary combined potential for reducing the urban heat island effect, improving air quality, absorbing GHGs, protecting street users against sun and rain, absorbing runoff from heavy rain, reducing noise pollution and wind gusts through street canyons, enhancing public space, and even producing food.

Summer School Workshop Project

The challenge posed to workshop participants was to develop concepts for great streets of the post-carbon age: how could streets, which were redefined for the motor age during the 20th century, be redefined once more for the impending post-carbon era? How could they respond to climate change? How could the great streets of Allan Jacobs inform such concepts, and how could physical design embody, encourage, and communicate social practices conducive to a post-carbon context?

The workshop began with a 45-minute lecture covering many of the topics discussed in this paper. After a brief discussion participants were then divided into three groups. Each group was assigned a different 300-meter length of a nearby street, and site visits of approximately 45 minutes were conducted. When groups returned to the workshop location they were provided with a 1:100 scale plan and printed orthographic photos of their site, rolls of tracing paper, and an assortment of pens, pencils, markers, colored post-it notes, and other basic office supplies. The design session that followed consisted of an intense 90 minutes, during which groups debated possibilities, developed their concepts, and produced a five minute presentation.

The case street, in reality several contiguous streets commonly referred to singularly as *Zweier-Linie* because they constitute the the former route of the number two (or *zwei*) tram, was designed in the 19th century as a key traffic and transport artery, a sort of functional twin to the grand boulevard of the *Ringstrasse*. It runs roughly parallel to the Ring, tracing the outer edge of the glacis that once surrounded the old walled city. The street is not without its own grand inhabitants, however, such as the *Rathaus* (City Hall), *Volkstheater*, *MuseumsQuartier*, and several palaces. Informal talks of converting one of the route's largest buildings, the *Landesgericht* or county court, into a hybrid education/ culture/art/innovation space have also recently picked up steam. It is a prominent street of citywide, national, and international significance.

In 2015 the City of Vienna's department of district planning and land use published a master plan to guide redevelopment of the former glacis (www.wien.gv.at, 2017). Priorities include strengthening existing public space, recovering public spaces for nonmotorized road users, and better connecting the old city with the districts that surround it. *Zweier-Linie* should not mimic the circular promenade of the *Ringstrasse*; rather it should set itself apart from the Ring by accentuating horizontal crossings and sections with different identities and designs. The city recognizes that high-volume traffic is not compatible with a post-carbon future and that *Zweier-Linie* presents the perfect opportunity to pioneer new approaches to street design.

From the outset, it was acknowledged that the challenge was absurd given the limitations of the workshop, which seemed to relax the participants and help foster an atmosphere conducive to playful experimentation. No one was expected to produce architectural or traffic plans. The basic approach was discussion through design, with design used not to concretely solve problems but to explore spatial, performative, and conceptual possibilities. This meant that illustrations should be more suggestive than prescriptive. By drawing ideas instead of writing them, a common jumping-off point was established with a minimum of restrictions, which would hopefully produce fruitful discussions and debates. (see Fig. 23, p. 97).

Group 1: "Negotiable Space(s)"

"Negotiable Space(s)" takes participation and adaptation as core values. The design relies on what the group call "flexible elements" that contain greenery, seating, street signage and other street furniture, and public space amenities. The street itself is only minimally designed; users can move the flexible elements as they see fit, making the street a perpetual work in progress that can be adapted to changing needs, desires, and conditions. These flexible elements are combined with strategies for activating vertical urban space on multiple levels by creating hanging gardens/greenery and subterranean water-based ecosystems for agricultural purposes in an interlinked network of hydroponic planting and fish farming.

The idea put forward shows the potential for the integration of a continuous matrix of hybrid micro-spaces enabling agricultural productivity within the urban core of Vienna. The design sketch can be read as a critique on the static nature of public space design, which often precludes or limits uses through a lack of flexibility and adaptability. The group specifically called for urban planning to be more open to meet the changing needs of an increasingly diverse range of urban dwellers.

The realization of such a concept of flexible elements in urban space would require agency and responsibility on the part of residents and other users. This may seem idealistic, but it is precisely the type of urban engagement needed if municipal government and administration is to partner with citizens in redesigning streets for the post-carbon age. The participatory nature of an interactive and changing streetscape would definitely create a strong and unique identity and a sense of wonder and magic for people that are new to this space or who pass through it infrequently.

Group 2: "Space of Pause"

The second group was inspired by the existing green square on *Friedrich-Schmidt Platz* and sought to expand its physical size and variety of functions. Despite the presence of the park, the street here is currently a car-dominated space, often absent of human activity. The group's design diverted the right-of-way onto a curving path in a challenge to the contemporary linear (and fast) paradigm of traffic engineering. Traffic lanes are reduced to one in each direction, opening space for other uses, namely "pausing".

This spatial potential of the project relates to how people can be brought into the space by improving climate comfort and creating new types of spaces that welcome temporary uses, such as outdoor meetings of people working in the adjacent institutions. "Space of Pause" would provide a natural escape within the urban environment. An intriguing idea of the project is to expand the existing urban forest and complement it with "outdoor office spaces" partly located in elevated tree houses as a sort of alternative to coffee shops or, indeed, indoor offices. The programming of the new spaces is not intended to strictly designate uses but rather to define areas that lend themselves to different types of uses.

The discussion of the project emphasized that the green spaces along Friedrich-Schmidt-Platz are currently fragmented. Unifying and expanding the different sections could attract nearby workers, students, and visitors during the day and residents of the adjacent eighth district in the morning and evening hours. The possibility was also raised that a hybrid forest/urban park in this location could become a meeting place for people working in neighboring political and institutional buildings such as the Vienna City Hall, the Austrian Parliament, the Palace of Justice, the University of Vienna, and various municipal departments, thereby enabling bureaucratic divides to be informally bridged.

Group 3: "Space of Possibilities"

Beginning with a significant reduction of traffic lanes from three in each direction to one, group three makes the street more accessible and user-friendly for pedestrians and non-motorized vehicles. The existing small square at *Stadiongasse* is expanded to form an entrance square for the eighth district and is improved with green space. The team addressed transportation issues by increasing the capacity of the tram line on *Stadiongasse* and introducing a bicycle highway along *Zweier-Linie*. Water and urban gardening features are used for climate control, food production, and social purposes while structurally reshaping *Zweier-Linie*.

In keeping with the theme "Space of Possibilities", the design sketch creates new spaces along the street using container-like structures for small scale commerce, gastronomy, and cultural events. The group considered the need to include consumptionfree zones as well as spaces where businesses can benefit from additional activation. Noise pollution was discussed as a factor that discourages people from using many otherwise attractive areas in the city, highlighting an often-overlooked environmental problem of urban areas dominated by motorized traffic.

Discussion

Taken together, the three projects provide valuable design ideas for reprogramming *Zweier-Linie* for the post-carbon age. The design sketches show streetscapes that again welcome not only transport demand but a broad spectrum of social, environmental, and economic concerns. In the subsequent discussion amongst designers and experts it was noted how difficult it is to completely free oneself from the (planning and design) paradigm of streets being predominately used for motorized traffic and to re-imagine streets as public spaces that can be designed as streetscapes with multiple uses. Eventually, workshop participants were able to include important planning considerations such as human scale urbanity, climate comfort, provision of green spaces, accessibility, and diversity of public spaces.

The workshop allowed participants to see streets as more than transport corridors, and the challenges of climate change and rapid decarbonization as an opportunity to improve the urban environment. Their design sketches raised important questions: how can we become a more inclusive society that is more engaged and participatory? How can we take responsibility for our own urban space as a collective public composed of involved individuals? How can we negotiate issues that arise within urban space and embrace productive conflict as an essential part of urbanity?

Conclusion

For most of the past 150 years, Vienna has been proactive in responding to impending problems, and it would do well to now develop an overarching, intersectoral, and inter-administrative decarbonization plan. Given the scale of the climate challenge ahead, decarbonization should not come as a welcomed side-effect of urban policy and strategic plans but instead be the overarching mandate for any policymaking and planning efforts.

Imagineering, a portmanteau of imagining and engineering made famous by Walt Disney, is an approach well-suited to the task of redesigning streets for the post-carbon era. The scale that we used in the workshop (1:100) allows for an almost tactile and immediate design/sketching process. Such rough design sketches can open creative spaces for stakeholders to discuss ways of implementing long-term policy goals. The initial presentation/lecture provided context and a frame of reference for the hands-on parts of the workshop. Perhaps the greatest challenge of climate change and decarbonization is making the leap in scale from the global, which is often abstract and theoretical, to the physicality of the local.

Allan Jacobs' *Great Streets* guidelines can be used to redesign streets that are attractive and compelling enough to catalyze more widespread changes to urban street networks. Including criteria that specifically respond to climate change and decarbonization, such as negotiated flow, productive activation, and radical greening, helps to reframe streets as public spaces capable of advancing the common good. Smarter Than Car was delighted to partner with the University of Vienna and the Vienna Summer School in Urban Studies for this workshop. We learned at least as much as the student participants and intend to conduct more such workshops in pursuit of great streets for the post-carbon era.

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