

# Time-based Solutions for Gender Just Low Carbon, Sustainable Urban Transformation – Learning from European Time-Planning Practises

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## 1 ABSTRACT

The European feminist planning community (including the authors) has been addressing the challenge of a gender-just transition to climate neutral cities offering high quality living conditions for all users for decades. The planning model of a “City of proximity” – originally postulated by feminist planners– has recently evolved to the model of the “15-Minute-City”. It is time to revisit 50 years of European urban time policies underlying this planning model and the theoretical ground for a temporal just city (“zeitgerechte Stadt”). The research project “DraussenDaheim” (=At Home Outside) puts this into practice.

The project aims to develop a methodology and toolbox which not only serves the participatory assessment of urban public spaces and their complex spatio-temporal use patterns, but also the co-creative simulation-based design of different planning scenarios. Taking into account a gender- and group-specific perspective, the focus is particularly on the development of less “gender-blind” participation tools that serve the analysis, assessment and co-planning of public open spaces. The target group-specific application of a digitally supported tool mix is described on the basis of two use cases and its added value for the key elements of a temporal just city, procedural and distributional justice, is shown. By making public spaces and vulnerable user groups a focus for the participatory implementation of temporally and spatially just urban transition, this will help to ensure that the transformation is inclusive, responsive to community needs, environmentally sustainable and socially just.

As the core of this paper, examples from European city-regions on time-planning practices as well as from the use cases of the DraussenDaheim project are presented with the purpose of informing gender-responsive participation and planning tools.

The conclusions highlight both the potentials and pitfalls of time-planning approaches in collaboratively assessing urban public spaces. Moreover, they anticipate a crucial endeavor: enhancing the adaptability and usability of these spaces for care-givers and care dependents. This task is a crucial step towards a more inclusive and gender just urban transformation.

Keywords: spatio-temporal use patterns, digital participation, planning tools, gender, public space

## 2 INTRODUCTION

The European feminist planning community (including the authors) has been addressing the challenge of a gender-just urban transition to climate neutral cities, offering high quality living conditions for all users for decades. The planning model of a “City of proximity” – originally postulated by feminist planners (Dörhofer/Terlinden 1985) – has recently evolved to the time based model of the “15-Minute-City” (Moreno et al. 2021). The ongoing research project “DraussenDaheim” (=At Home Outside<sup>1</sup>) addresses the urban time policies underlying this planning model and the theoretical ground for a temporal just city (Henckel/Kramer 1999).

DraussenDaheim applies different concepts of spatial justice to support equal access to planning processes and data generation. It aims to raise awareness within a neighbourhood and amongst policy makers of the diversity of daily routines and on different accessibility of public spaces. The goal is to improve fair and equitable access to public spaces with a special focus on care-givers and care dependant people. For these purposes, the project DraussenDaheim is developing a methodology and toolbox which not only serves the participatory assessment of urban public spaces and their possible uses (simultaneous, overlapping, etc.), but also the co-creative simulation-based design of different planning scenarios. Taking into account a gender- and group-specific perspective, the project puts special emphasis on the use and development of digitally

<sup>1</sup> More about the national FFG-funded research project see <https://projekte.ffg.at/projekt/4088467> <https://drc.ait.ac.at/sites/draussendaheim/> and project webpage DraussenDaheim | Projekt Webseite (ait.ac.at)

supported tools that are less inclined to overlook gender-related factors in the analysis, assessment and co-planning of public open spaces. DraussenDaheim also gives the opportunity to revisit planning strategies and implementations of European cities with up to 40 years of experience in time planning by transferring selected methods, theories and practices to the challenges of two use cases: an urban square in a dense fin de siècle quarter (Aumannplatz, Vienna), and a newly built housing area in a peri-urban location south of the town of Zell am See (Sonnengarten Limberg, Salzburg). In particular, a mix of analogue and of digitally supported tools is used and adapted to the application context. While in both use cases a special focus is placed on gender-relevant groups (e.g. their needs in relation to the studied focus area, their requirements for handling the tools or their equal inclusion in the workshops), the tools are individually combined and adapted depending on the specific research question and local context (see chapter 4 in corp paper Fessler et al 2023).

This paper reports on the preliminary findings of the applied research as well as its theoretical basis, particularly addressing the subquestion: What can we learn from European time practices? One key lesson learned from the examined time-planning approaches is the understanding of time and space as resource, and as an indicator of inequalities. This understanding brings to light a new set of values for the planning community in finding time-based solutions for gender-just, low carbon and sustainable urban transformation: time and gender justice in goals definition and in the selection of design criteria.

The paper is structured as follows: first, we clarify the background on gender in urban planning, introduce key-concepts for a temporal just city and present methods used to evaluate time-space policies and co-creation processes. Next, in section 4, we discuss urban time-policies with focus on time-space patterns in a brief literature review to investigate how the diversity of tempo-spatial use patterns is theorised and implemented. Furthermore, selected examples from European time-planning practice are presented, which are able to inform the DraussenDaheim use cases with a gendered lens. Section 6 then shows selected transfer applications from two Austrian use cases. Finally, section 7 summarises the findings from European time-space planning practice, proposes some recommendations identified for a just urban transformation and highlights open research questions.

### 3 BACKGROUND, KEY-CONCEPTS AND METHODS

#### 3.1 Background: Gender in Urban Planning

Various guiding principles fundamental to urban development, such as the United Nations Sustainable Development Goals (SDGs), cite equality and the reduction of inequality and discrimination as the basis for inclusive and resilient urban development and social cohesion. The gender mainstreaming strategy (EC 1999) anchored in the Austrian legal system, which includes elements such as gender budgeting, is also oriented towards these goals, especially SDG 5 "Gender Equality". In accordance with gender-equitable budgeting, the federal government, the provinces and the municipalities commit themselves to strive for the actual equality of women and men in budget management and thus to take the needs of both genders equally into account. This applies, for example, to the construction of public buildings and the design of public parks. Such strategy papers, which aim at the right to participation and equal opportunities, regardless of gender and sexual orientation, always include basic principles of good urban development. It is no longer appropriate to imagine guiding documents for integrated and sustainable urban development policy in Europe, such as the New Leipzig Charter, without addressing gender. There, for example, it is stated that the transformative power of cities must ensure equal opportunities and environmental justice for all, regardless of gender, socio-economic status, age and origin. All social groups should have equal access to open space and services of general interest. This is now widely recognised in the planning community, but has not always been taken for granted. Today's visible remains of (car-centred) spatial planning, almost exclusively from an economic breadwinner perspective, driven by speed and efficiency thinking, are evidence that diversity and needs outside the norm (traditionally assumed to be healthy and full-time working men) have long been disregarded. More than 40 years after the famous envisioning of a feminist city (Hayden 1980), there is still great inequality in our cities, which promotes a rethinking towards traffic calming and improving sustainable accessibility for all. The critical debate driven by representatives of feminist urban development has not only paved the way away from a dualistic view (man vs. woman) towards gender-just urban development (all genders) and a general gender-responsive planning approach, but has also created

awareness for the complex interplay of different forms of inequalities. These mutually reinforce each other and increase the vulnerability of already disadvantaged groups even more (intersectionality).

In this context, models such as the “15-Minute-City” have great potential insofar as they focus, besides traffic avoidance, on the integration of different needs in terms of sustainable accessibility. The model potentially offers easy and time-saving access to services, as well as attractive mobility options for accessing opportunities that are affordable, usable and non-discriminatory. Finally, gender and other diversity factors have a decisive influence on the quality of life in cities and municipalities and must therefore be considered in urban planning to ensure social and spatial justice (Terazza et al. 2020, Kempin Reuter 2019, De Siqueira et al. 2022). For example, at the neighbourhood level, requirements for lighting, pavement width, furniture and surface materials differ by gender, but also by other social categories such as age (Brüchert et al. 2022; Krishnamurthy, 2019) and physical or cognitive impairments (Kempin Reuter 2019). So, if one wants to know for whom our cities and (transport) systems are designed, one only has to look at how different needs are captured and whose (time) constraints are taken into account. The authors of this paper advocate for climate-friendly urban planning that incorporates diverse needs and is temporally adapted to include, rather than exclude urban residents.

A sexist city is not a sustainable city, because of its social and economic inequalities. Until recently gender equality focussed on the redivision of income and particularly unwaged care (see for example Zibell, 2022). Reconciliation between paid and unpaid care work, productive and reproductive work, child friendly and fair shared cities as planning and design tasks are one answer to the dysfunctionalities of urban spaces. Now we know that reducing CO2 emissions needs more than a new deal for unpaid care work: it requires a gender-just transformation. This brings the need to rethink time-based planning strategies underlying the 15-Minute-City planning model, i.e. rethink how we reorganise cities, balancing waged and care work through services, mobility and housing.

### 3.2 Key-concepts for a temporal just city

For defining the key conception of a temporal just city, we follow Henckel & Kramer (2019). In their comprehensive reader they introduce the following key elements for a temporal just city:

- (1) procedural justice, the question who has a say and whose voice is heard in planning and design decisions,
- (2) distributional justice, who has access to which urban resources.

In order to achieve a temporal just city, procedural justice - i.e. fair participation and equal distribution of power in planning processes and beyond - is a prerequisite.

All forms of tempo-spatial justice suggest that a just urban transition cannot be thought nor realised without gender equality. In planning terms, equitable access to spatial infrastructures and resources as indicated in SDG 11 involves access to adequate housing, basic services (11.1), universal access to green spaces (11.7) and barrier-free access to sustainable transport offers (11.2). Special attention shall be given to include care givers (majority women), care dependants (children), persons with disabilities and older people who are more likely to be ‘in vulnerable situations’ (11.2). Putting care-work in focus immediately links the distributional and procedural justice to time: Fair/equitable access to spatial resources depends on distance, transport and mobility offers as well as on the autonomy of the users. Especially daily routines depend on the accessibility and availability of infrastructures of everyday life including opening hours and location (Horelli 2006, Wien 2013). Furthermore, the temporal design of participation processes (who can participate at what time and under what conditions?) determines plurivocality and thus the (more or less pronounced) representation of diverse spatio-temporal patterns of use. This is an essential component of procedural justice in urban planning and design.

Inspired by these concepts, the following main-research questions linked to spatio-temporal justice in planning have been identified.

For distributional justice: Which different time-space patterns and daily routines of urban users are addressed and is there a gender bias? Which analytical methods for analysing and mapping inequalities can be found in European time planning documents? How equal or unequal is availability of and access to spatial resources (=everyday life infrastructures including public space) and to temporal resources (personal time and time poverty).

For procedural justice: How do different time-space patterns inform the design and (barrier-free) access to all steps of a planning process? Which actors are identified and how are these different actors addressed to have a say in the planning cycle (context based analysis, visioning, co-planning etc.).

### 3.3 Research methods: developing a model of care-profile, evaluating time-space policies and co-creation processes

To overcome stereotyping and ‘sex counting’, the authors have developed a model of care-profile which characterises residents and other urban users according to their care responsibility (Tummers & Wankiewicz 2021). This model differentiates from the habitual definitions of ‘target’ or ‘user’ groups, in that it does not put the personal characteristics on the foreground, but looks at the determining conditions for the use of (semi-)public urban space. Key conditions which influence strongly the temporal and spatial flexibility or rigidity and the autonomy or dependency of persons in accessing urban resources are care responsibilities (e.g. perceived by parents) and care dependency (e.g. of children). Persons with care responsibility have little flexibility in their daily time-space-trip-chains. For example, the schedule of a part time employed single parent depends on working-hours and the availability, costs and opening hours of child care facilities.

Besides care responsibility and care dependency tempo-spatial autonomy and flexibility is related to a persons’ gender, age; physical and cognitive ability (barrier-free accessibility). Last but not least, a person’s occupation (employment, education, volunteering) determines their respective time-schedules and autonomy. This knowledge, bundled in care profiles<sup>2</sup>, was applied in various online surveys (including questions about care responsibilities or dependencies) and co-creative workshop formats of the two use cases Aumannplatz (Vienna) and Sonnengarten Limberg (Zell am See), which focused in particular on group-specific spatio-temporal patterns of use. One of the main intentions is to contribute not only to equitable participation in participatory processes, but also to the spatio-temporal organisation of open spaces so that they are accessible to vulnerable groups without displacing others. Gender is at the centre of this debate and is reflected in both the use of space and time. From statistics and available data (Trapez 2020, Gender Equality Index 2022)<sup>3</sup>, we know that in current European societies the following typical gender roles and care-related responsibilities are not equally divided between women and men. Particularly women in general perform more (unpaid) care-tasks (taking care of children, elderly and impaired persons as well as participating in cooking and housework) while they have less income. Men, by contrast, tend to have more free and leisure time, as time-use studies in Austria and Germany show (Panova et al. 2017, Statistik Austria 2009).

Building on this background knowledge, the authors’ task within the research project DraussenDaheim was to select and present key topics, methods and tools for territorial and spatio-temporal analysis and to report back to the project team. For this purpose, the policies of European time planning frontrunner city-regions were analysed, which address different daily routines and rhythms of urban user groups. Further, desktop research and document analysis were carried out to investigate planning documents (time plans, urban strategies) to see to what extent and how tempo-spatial planning strategies and design criteria are reflected in them. Finally, an iterative approach was adopted in dialogue with the research partners to explore how these strategies were implemented in collaborative and co-creative planning processes. Moreover, following and participating in online discussions about the concepts and state of the art of implementing the 15-Minute-City enabled the project team to cross-check its findings. On this basis, the knowledge gathered was incorporated into the use cases of the DraussenDaheim project, in which two participation processes were carried out using digitally supported tools, taking into account the gender and time planning perspective.

## 4 TIME AND SPACE PATTERNS IN URBAN PLANNING AND GEOGRAPHY

This section gives a brief introduction on the history of temporal just planning and highlights the links between time planning, sustainable and inclusive human settlements (SDG 11), followed by an overview on how the diversity of tempo-spatial use patterns and daily routines are addressed and mobilised to advance gender equality and inclusion.

<sup>2</sup> More about the transfer of these care profiles in the DraußenDaheim project see chapter 5 in Fessler et al 2023

<sup>3</sup> Trapez – Transparente Pensionszukunft (2020): BKA-(<https://www.trapez-frauen-pensionen.at/trapez-analyse.html>), Austria | Time | 2022 | Gender Equality Index | European Institute for Gender Equality (europa.eu)(access 20.10.20)

#### 4.1 Theorising diversification of time-space patterns

Time in planning theory and practice started about 50 years ago with Hägerstrands time geography (1970). The current revival of time-based urban strategies includes the 15-Minute-City and the Superblock model (Paris, Barcelona, Vienna), as well as the 2021 Barcelona Declaration and work programme on Time policy 2.0<sup>4</sup> by the European network of regional and local authorities.

The Swedish Lund school on time geography around Hägerstrand, theorized the concept of space time cube. Using 3D visualisation of time paths (=trajectories) and bundles, the diversity of time-space patterns and the different constraints which influence the choices of people became visible (Hägerstrand 1970).

Feminist researchers and practitioners have criticised the time-geography approach, but also used and further developed it with gender and diversity issues (Rose 1993, Kwan 2000, Ellegard & Karlsson 2009). The US-time geographer Kwan for example looked at the impact of time-space constraints on time-space patterns (1999), visualizing these use patterns in GIS with layers of networks, settlement structure and the daily movement of time-paths from different user /gender+-groups (e.g. Afro-American women in Portland) (

(Kwan: <http://meipokwan.org/Gallery/STPaths.htm>) based on a great number of time diaries.

Action research like Eurofem (2000) introduced female everyday life use patterns and rhythms and placed the related infrastructures into the centre of planning and design.

For the Dutch planning culture, Tummers (2009) and van Schaick (2011) looked at the implications of this tempo-spatial diversity for planning and design innovation in the network city. Tummers proposes a set of flexible and adaptable planning and design criteria which enable user friendly and high quality urban environments for the variety of users and life situations. Further she proposes collaborative and participatory planning processes addressing the diverse users and their daily routines adequately. Schajck pursues the possibilities of tracking to understand time-space patterns (2011).

Thus, a body of knowledge about complex (female) trip chaining of part-time care-givers vs. simple full-time 9-5' commuting tempo-spatial use patterns has entered traffic and mobility planning. It inspired many projects in gendered infrastructure and open space planning. Horelli (2006, 2013) and Damyanovic et al. (2013) argued that managing time and space as a challenge for residents as well as the accessibility and availability of everyday-infrastructure (including open spaces, care-facilities and meeting points) ought to become a main planning task for sustainable urban living environments.

#### 4.2 Collecting data on time and space patterns

Italian time policy gives the most comprehensive and inspiring answer to meet inequality and reconciliation challenges at local level. It was strongly supported by academic action research from Politecnico di Milano and Torino (Bonfiglioli, Stabilini & Zedda etc.) as well as embedded into a legal framework prescribing and obliging local and regional authorities to develop and implement a local time plan. Cities like Bolzano, Bergamo, Pesaro and Genova experimented with cooperative processes including surveys, with innovative spatio-temporal analysis and co-diagnosis as well as with integrated time and development plans (e.g. Time plan Bergamo 2004, Bolzano 2006). The mapping of urban rhythms, the harmonisation of collective and private time schedules, the mismatch between needs and opening hours of shops and services, the urban night time and the lack of personal free time are in the centre of these time planning processes (Zedda et al, Bolzano 2006). Some cities show a remarkable continuity and long soufflé in time planning: Bolzano started in the mid nineties and is part of the time policy 2.0 movement of 2021, committed with a work programme on 15-Minute-City implementation (Barcelona declaration).

In terms of data gathering, nowadays, we still face the lack of empirical data on gender+<sup>5</sup> differentiated time-use, daily routines and time space patterns. In Austria, the last statistical survey data from 2008 (!) only gives geographical differences at province level. In Germany, since 1992 each 10 years a state-wide survey on time use gives information on gender, age, household and care-responsibilities for children (Zeitverwendung

<sup>4</sup> See the “Barcelona Declaration of a European cities network of cities promoting the 2nd generation of time policies. [https://www.gemeinde.bozen.it/UploadDocs/31421\\_DECLARATION\\_BARCELONA\\_ON\\_TIME\\_POLICIES\\_EN.pdf](https://www.gemeinde.bozen.it/UploadDocs/31421_DECLARATION_BARCELONA_ON_TIME_POLICIES_EN.pdf) 14.01.2023)

<sup>5</sup> Gender+ indicates the complex interplay of different forms of inequalities (intersectionality) placing gender at the core.

Deutschland). However, no data evaluation for cities nor regions is possible. In 2017, Panova et al. have published a study based on the 2013 data which gives detailed data on time use and constraints of mothers and fathers in the ‘rush-hour of life’ (care givers of children younger than 15 years old) and compared it to other age groups. A more detailed picture of gendered time space use patterns concerns the scale of districts and may be generated from regular mobility surveys. In Austria, the most recent data on mobility patterns date from 2013/14 (Österreich unterwegs) with a special evaluation on gender differences of these data (Knoll et al. 2016).

## 5 LEARNING FROM TIME SPACE PLANNING PRACTICE

From the literature review, we derive four types of time-space approaches in urban planning: time as a resource; time space patterns and public space; analysis based on time-space patterns and co-planning strategies.

### 5.1 Understanding Time and space as a resource

#### 5.1.1 Bolzano Integrated Time Plan (2005 – today)

The initial aim of the Bolzano Time Plan 2005 was a better distribution of care work to improve access to the labour market for care-givers (mostly women). During more than 10 years of a collaborative co-creation process accompanied by action research and evaluation by Politecnico di Milano, this time plan evolved to a fundamental shift in planning visions, goals, planning tasks and instruments to achieve a time and gender just sustainable urban transformation. Already in 2005, Bolzano has postulated the 10-Minute-City with sustainable and inclusive public transport, a compact city model and a high quality public space for a diversity of users. Time is a key indicator and success factor for justice and wellbeing in the Urban Time Plan of the city of Bolzano (Stadt Bozen 2005, 7). It is one of the most comprehensive time planning documents and results from long-term experience with a very pronounced gender equality priority aiming to alleviate women’s everyday life. Defining the increase of personal time as success indicator for the time plan goes beyond and redefines the task of planning and design. By this, Bolzano strives for distributional justice in the access of personal time as a resource. Further, Bolzano has been experimenting with co-creation, pop-up workshops, temporal use change and co-diagnosis to raise awareness of the diversity of time-space-patterns. A few practical examples are: Time diaries, pop-up workshops, street art, temporary closure of public spaces for sport and play, opening of school courts for a broader public as co-creation and discussion places. Collaborative service development for lunch meals, new infrastructures and opening hours of childcare facilities, shops, municipal and health services react to the diversity of daily routines of citizens, clients as well as employees. These planning processes are conceived to achieve more procedural justice. Implementing the vision of the 15-Minute-City in Paris

The City of Paris is a frontrunner in envisioning and implementing „la ville de quart d’heure“/the 15-Minute-City at district level. “15-Minutes-Paris” strives for urban districts suitable for everyday life: neighbourhoods which provide accessible infrastructures for the diversity of tempo-spatial daily routines, with a focus on care givers and care dependants. This includes accessible shops and services, a network of high quality and safe streets and roads, a multifunctional new infrastructure, a citizen kiosk as indoor place to meet, and high quality public spaces as outdoor meeting and activity points. This vision asks for a creative transformation in the use of existing infrastructures (e.g. school yards), the development of new public infrastructures and a revised management of public services. In short, Paris strives for distributional justice in the built environment.

Both Paris and Bolzano provide many inspiring answers to the questions ‘how will life be organised in a time just city?’ and how a co-creation process towards non sexist, gender equal and low carbon cities could look like.

### 5.2 Diversity of time space patterns and public space

The next examples propose a shift in norms and values as well. They are facilitating the autonomous mobility of children in urban public space, at the same time alleviating their care givers, giving them more personal time. If young children and older people move autonomously in their city, they do not need another person (care giver) as companion, so the care givers gain personal time.

### 5.2.1 Network of child-routes - Kindlint (NL/BE):

The main interest of these “Child-routes” is to give children as pedestrians access to urban resources. In a co-creation process, the child routes are selected and visualised with colours and other signs in the streets and squares. The relevance for care givers is high: if children are able to move autonomously in their city, the care givers do not need to walk with them and will have time for other things. This instrument comes from the Netherlands and Belgium. Experiences show that older people also use these routes very much. They are attractive and easy for orientation.

This strategy also reverses the planning approach: adapting the city for children as a safe walkable space all day long instead of protecting and ‘fencing’ children when walking to school and back.



Fig 1: Network of child route in Middelburg, NL (Online: <https://www.pzc.nl/overig/middelburg-heeft-veilig-kindlint~a5194ec0/?referrer=https%3A%2F%2Fwww.google.com%2F>) – (access on 18.03.22)

### 5.2.2 Temporal change of use - Hackney-Play-Streets (UK)

Based on a cooperative implementation of a public health programme in east of London, a temporal change of use of public and semi-public streets and squares has been established (Hackney Play Association 2015). Public spaces are closed for traffic circulation regularly for an afternoon or a weekend, to give children and their parents temporal access to streets as playground and exercise area. This example also changes the rules of the planning game: instead of monofunctional traffic lanes, public space is used as playground, sports field and meeting place for the local community from time to time. People of all ages, genders and colour are treated as actors, especially giving groups in vulnerable situations access to sport and play facilities. This example also gives answers to our research question of how life will be organised and co-planned in a time-just, non-sexist, low-carbon city.

## 5.3 Contextual (territorial) analysis based on time-space use patterns

Understanding time-space patterns in the local context is crucial for developing strategies. Several methods of analysing, data-harvesting, mapping and visualising diverse patterns of use of time and space have been developed, some of which we present here.

### 5.3.1 Diversity of tempo-spatial use pattern in Nantes metropole (F)

Based on surveys or time diaries of typical week-days and weekend-days, Nantes has developed an infographic which shows the variety of time-space-patterns and the activities over 24 hours of four members of a family. This easy understandable visualisation of different time-space-patterns within four family members of both sexes is based on qualitative interviews. It can be used to start a collaborative territorial diagnosis and planning towards more tempo-spatial just and sustainable city regions.

### 5.3.2 Time-use survey in Germany (2002/2012/2022)

This Germany-wide survey shows the differences in time use of people of all genders, age, occupation and family situation (with and without care-responsibilities). The data give a detailed idea of gender differences in care work and the burden of women with children under 15 years of age (Panova et al 2017). These data are unfortunately not available for Austria (last data from 2008).

As a very comprehensive and periodic survey it is an excellent source for comparing time use patterns of male and female inhabitants in different family situation, age or living environment over decades. Comparing local differences (for cities, urban quarters or regions) is not possible though.

### 5.3.3 Mapping urban rhythms: Chronotopes of shops and services in Lyon (F)

This spatio-temporal mapping method has been developed by a French research team and is called “Chronotope”<sup>6</sup>. For the Gerland-Quarter in Lyon, the location and the opening hours of shops and services are mapped in hourly intervals. A video performance of the different maps shows the quality and accessibility of shops and services within 24 hours. It highlights daily rhythms, local and temporal differences in access to shops and services. By doing so, this mapping method can focus on reconciliation and supply deficits of residents and workers. The topics may be extended to child-care facilities, day care centres for senior citizens etc. to highlight distributional injustice in cities.

## 5.4 Co-Planning Strategies committed to procedural justice

Female and feminist scholars looked for more gender balanced planning processes and broader representation of female lives and interests. Both digital and analogue tools and methods are needed for this step towards procedural justice. Widely practised is walking to share and exchange everyday life experiences and different trajectories of residents. Walking has been established as a method that is published and incorporated in planning processes.

### 5.4.1 LENA-the Nordic approach for redefining co-planning in time and space

This LEarning-based Network Approach to participatory urban planning and action research has been developed since 2000 by Scandinavian planners who form part of the tradition of feminist critique on mainstream planning. Beyond these infrastructures and the challenge to manage time and space, the digital tools supporting the everyday are also relevant for this paper, as well as the LENA-planning cycle with contextual analysis, visioning, co-planning, implementation, maintenance and evaluation (Horelli 2006, Wallin 2013,15).

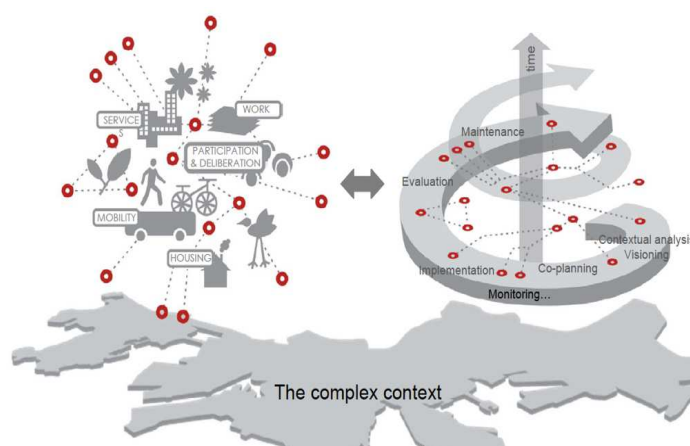


Fig 2: The Learning-based network approach to participatory urban planning and action research. (Wallin 2013, 15 – Fig. 1.1 by courtesy of the author) The red ellipses symbolise the use of digital tools

LENA systematically integrates the accessibility and the co-development of infrastructures of everyday lives and the diversity of spatio-temporal use patterns (distributional justice) into a collaborative ‘co-planning’ arena, with strong focus on digitalisation as well as on deliberative and self-organised processes (procedural justice).

### 5.4.2 Walking as a method for co-planning – Paris and Barcelona

The City of Paris (Guide Référentielle 2017) and the Barcelona based private urbanist collective “Collectiu Punt 6” (2017) have elaborated manuals with Gender Walks methods building on the long-term experiences of the bottom-up organised Jane’s walks.<sup>7</sup> Paris has professionalised this Gender Walking method from “top-down” to assess and co-develop an urban quarter from the perspective of (mostly) female users (Ville de Paris 2022). For the bottom-up driven and implemented approach of the Catalonian group “Col-lectiu Punt 6” walks are followed by a great variety of co-creation and participatory methods and procedures for a

<sup>6</sup> More details in Equipe Chronotopies – Alain Guez – Laboratoire Architecture-Anthropologie Paris (2003bxx): <https://www.laa.archi.fr/+Chronotopies+> (access on 21.03.22).

<sup>7</sup> Lets get walking (2022): Janes Walks Festival. <https://janeswalk.org/> (access on 25.04.2022)



‘gendered urbanism’ (Col-lectiu Punt 6, 2017). The crucial role of public services, the quality and usability of public space at day and night-time and the visibility of female lives and contributions to local, urban economy is in focus (distributional, procedural justice and representation (Gutiérrez-Valdivia 2021)).

Walking as a method is one of the most successful collaboration instruments for bringing into the planning process the experiences and user perspective of the (normally unheard) urban users. This instrument may be applied both for diagnosis and analysing spatial qualities and disfunctionalities, as well as for proposing new spatial and temporal organisation at local level (arrondissement, neighbourhood). In this way, walking empowers women and contributes to more procedural justice.

The following section shows how these findings have informed the DraussenDaheim case-studies.

## 6 TRANSFER AND TEST IN LOCAL USE CASES

Based on the practical examples of space-time planning in European practice outlined here, recommendations were derived on how insights gained from them could be usefully applied to the DraussenDaheim use cases. Regarding the collection and evaluation of data (e.g. on the daily use of a public space in Vienna or the recreational use of open spaces in and outside a settlement in Zell am See), it was decided that the specific analysis of diverse mobility and use patterns should not only be differentiated according to age, but also to gender and care responsibilities. The differentiated interpretation of the use case results would thus facilitate the setting of group-specific incentives for a time- and emission-saving qualitative stay in open spaces close to home.

In general, the findings from the analysis of European time-planning approaches could contribute to specify requirements for researching gender+ differentiated spatio-temporal patterns of use and daily routines. This includes the precise recording, analysing and visualising of data. Adapting the methodological approach from a user-sensitive perspective and carefully embedding the developed tool chain (as a mix of analogue and digitally supported tools)<sup>8</sup> in participatory formats ensured that gender- and care-relevant information was collected in preliminary surveys and linked to other participation and simulation tools in the further process. In addition, the design of participatory involvement (in data collection and co-creation process) could thus be adapted to specific target groups (e.g., their requirements regarding the toolset and their time availabilities). This ultimately benefits both procedural and distributive justice.

### 6.1 Use case Aumannplatz in Vienna’s 18<sup>th</sup> district

Due to traffic issues and inadequate design, Vienna’s 18th district central square no longer serves its users’ diverse needs. In a broad participation process based on a functional and socio-spatial analysis, a redesign of the square is being sought, supported by the DraussenDaheim project. It contributes to the identification of the spatial qualities of the square as well as the current and future possibilities of use for specific target groups, taking into account temporal components (times of use and personal time resources).

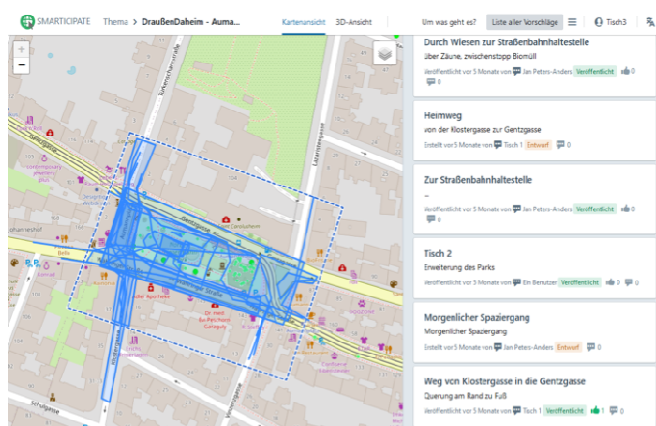


Fig. 3: Overview of all mapped pedestrian pathways (blue lines) including comments on temporal use (e.g. “morning walk”) resulting from the tool workshop using “Smarticipate”

<sup>8</sup> more about combined (digital) tools and methods used in DraußenDaheim see chapter 3 Fessler et.al (2023)

The initial results from the online survey (n=47) offer insights into the spatio-temporal patterns of use on weekdays and weekends as well as at different times of the day. They also shed light on respondents' socio-demographics and caregiving commitments. Analyzing these complexities from a gender perspective reveals that although nearly 70% of respondents have care-giving responsibilities, they rarely use the space with children or older people. The survey, a vital research element, connected personal attributes (e.g. gender, age or employment) and usage preferences, engaging the local community and encouraging participation in follow-up workshops. To be considerate of the valuable time resources of different groups and to increase the reach of the survey, it was offered via digital devices (smartphones, tablets) as well as for analogue completion. For seniors, visually impaired and people with language difficulties, personal assistance was offered on the spot. This also applied to the actual workshop with the digital participation tool "Smarticipate", where the focus was on the possibilities of crossing the square and using it as a place to stay and play. By jointly mapping footpaths walked at different times in mixed-age and gender groups, complex temporalities and rhythms of different users became visible and negotiable.

In addition to proposing new paths, participants had the chance to make new design proposals for the square. Using the "Simulate" tool, a real-time pedestrian simulation illustrated the impact of these designs on movement throughout the day. This highlighted everyday activities like commuting (to work or school), offering insight into the square dynamics at different times (morning, midday, evening). The outcome showcased scenarios with new design elements, altering spatial boundaries and influencing path-time dynamics.

## 6.2 Use case Sonnengarten Limberg in Zell am See

Unlike the Aumannplatz use case, the Sonnengarten Limberg research didn't begin within a redesign process. Instead, it offered the chance to monitor gender-specific spatio-temporal patterns of use inside and outside the freshly developed housing estate. Using a diverse method mix, similar to Aumannplatz, enabled wide participation through various channels (e.g. a WhatsApp group for residents). Housing management, played a major role, acting as a bridge to residents and amplifying individual engagement.

While the Aumannplatz workshop was held in a nearby shop bordering the square, the participation in Sonnengarten Limberg was organised directly in the housing management's premises. This communal space served to introduce participants to the "Smarticipate" tool for creating an online open space use diary. Participation requirements included completing an online survey (n=59) on leisure and mobility habits, spread through emails, the WhatsApp group, and personal conversations. Collecting details on social background (including care responsibilities) and housing situation as well as mobility habits provided insight into the participating group, which finally (partly) took part in the workshop with the digital tool (remaining persons were provided with a handout) and the creation of the diary. Both steps of participation were compensated. By analyzing the preliminary survey and categorizing participants by specific mobility behaviour types, diverse focus groups emerged. These groups included people such as a digitally savvy young mother, an environmentally conscious childless couple, and an older lady with limited technical skills. During the workshop, participants reconstructed their typical weekday and weekend routines (open space use and destinations inside and outside the neighbourhood, additional information on time, duration and purpose of use as well as means of transport) and entered these details into the "Smarticipate" tool.

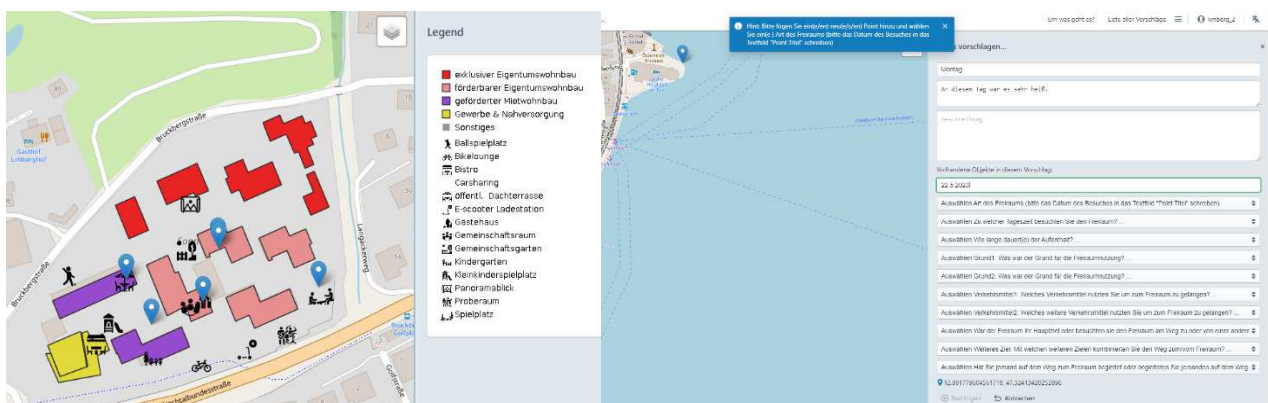


Fig. 4: Mapping of leisure destinations inside and outside the settlement at different times using Smarticipate.

14 of the approximately 60 people who participated in the first survey committed to keeping the space use diary over the period of several weeks and thus sharing personal data on the temporal use of points of interest with the research team. The analysis of the diaries and thus of all collected entries, which can be assigned to group profiles previously collected in the survey, makes different individual and group-specific use patterns and rhythms comprehensible and representable. In addition, possible temporal overlaps of user groups in certain open spaces can be identified. Subsequently, the results can provide far-reaching indications for the (spatial and temporal) optimisation of (semi-)public open spaces in the neighbourhood and thus contribute to an inclusive, gender-just and CO2-avoiding urban redevelopment.

### **6.3 Lessons and possible transfers from the goal the DraussenDaheim study**

Preliminary results show that collaboration and consultation processes that promote shared decision-making, low-threshold design, participation, and careful selection of digital participation tools to take account of gender- and group-specific needs and ideas are crucial for inclusive and gender-just space-time planning.

Based on practice analysis and findings we have identified the following factors to operationalise time-just urban transformation:

- Put time on top of the planning agenda as core indicator of access to personal leisure and flexible time, and its fair distribution as a core value.
- Strive for distributional justice (equal access to tempo-spatial resources) as well as for procedural justice (who has a say and whom do we reach and how)

We suggest to add representational justice (Gutiérrez-Valdivia 2021 ) which asks if female lives and their contributions to urban life and economy are appreciated and reflected in public spaces (e.g. name of streets), in planning methods and data generation.

## **7 TOWARDS TIME-BASED USER-FRIENDLY TOOLS FOR GENDER-JUST URBAN TRANSITION (CONCLUSIONS)**

### **7.1 Findings from European time-space planning practice**

One key lesson and inspiration from European time planning practice for our approach was to understanding time and space as resource and indicator to analyse inequalities. This implies a new set of values: goals definition and design criteria. Space-time-policy is a field where values and norms matter. Nevertheless, EU or state-wide representative surveys of time use and activity patterns are rare and there is no or little spatial aggregation of statistics. Cities and regions make their own surveys and are creative in visualising the different daily routines where gender, age, household situation and other sociodemographic categories are widely considered. These qualitative data are used for awareness raising in participatory planning processes. They can be incorporated in the form of innovative presentation methods such as maps and infographics like Chronotopes, spatio-temporal diagrams of the activities of individuals or a population.

Distributional justice is not mentioned explicitly, but on top of the agenda are the following planning tasks: fair/equitable and barrier-free access to high quality public spaces, user-friendly mobility (walkable city), new services and infrastructures (lunch meals for teenagers, citizen kiosk), extension of opening hours and mobility offers.

Most of the practice examples have integrated gender issues in all process-phases, sometimes implicitly by addressing reconciliation challenges or dysfunctionalities and mismatch of opening hours. Specific attention is given to women, families, children and teenagers (not gender differentiated).

Procedural justice is not mentioned explicitly, but is visible as value. A variety of user groups together with schools, public and private service providers and civil society are integrated in all phases and in some cases strongly supported for self-organisation and autonomous implementation. From context based territorial analysis and interpretation to data generation, visioning, planning and design to implementation, a wide range of collaborative methods are applied: co-diagnosis, walking interviews, pop-up workshops, pop-up concerts and discussions as well as time diaries. However, research about the inclusive or exclusive effects of digital tools in collaborative planning process is project-related and cannot be generalised.

Even if the repertoire of methods was not fully exhausted in the context of the DraussenDaheim project, it is clear that in both use cases a wide variety of efforts were made to contribute to procedural justice. Different

communication strategies and a mix of methods were used to involve diverse groups of people of different ages, with and without care responsibilities, as well as people with (mobility) impairments. In this way, new perspectives on their use of time and space could be gained and group-specific requirements for the multifunctional use of time and space could be identified. This made it possible to reflect and represent different life conditions in the development and design of diverse and gender-just public spaces and to incorporate the resulting outcomes into the underlying space-time policy. This approach could in turn benefit the well-informed creation of a time management concept for urban open spaces, such as Aumannplatz, and thus strengthen distributive justice.

## 7.2 Implementing time-space planning in practice

For distributional justice

- Investigate, analyse and map the diversity of time-space use patterns with special attention to care tasks and care dependencies is an eye-opener for residents, employees and other everyday-life-planning experts.
  - Putting on the gender+ lenses to assess spatial qualities and dysfunctionalities of urban resources and how accessible they are for different users. Put a special focus on how this accessibility changes at different hours of a day, on weekends, at night, during holidays etc.
  - This core planning task can only be realised as a horizontal task in cooperation with many other disciplines/departments (social work, labour market regime, opening hours, etc).

For procedural justice

- Co-creation and co-planning start with stakeholder-mapping (who is the most concerned and interested) and the question how these groups can be included into the planning process.
- Digital participation tools can support the collection of gender- and group specific needs, requirements and ideas, as the outlined use cases show. The quality and equity of their results is influenced by the (low-threshold) design, the (inclusive) design of the participation formats
  - Digital tools combined with face to face workshops and qualitative surveys support the collaborative generation of data (e.g. diversity of time-space use patterns with time diaries).
  - There is still much to do for improving the usability of the tools and the co-design with residents, which has a great potential for increasing easy accessibility to the planning process.

Further research is needed on the following questions:

How to investigate the diversity of time-space patterns at community and neighbourhood level and the distribution of unwaged work between genders, age groups etc.?

Under which conditions (inclusive process design and cooperative tool selection, usability e.g. smartphone-app, settings etc.) can digital tools enhance or hinder (exclusion of digital illiterates) residents and other user groups from participation in a planning process.

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