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Paris's Limited Traffic Zone
A Radical Sustainability Mobility Transformation

An extension of the group assignment "A Car-Free Paris? The Possible Future of the Limited Traffic Zone (ZTL)"

Introduction

In 2024, Paris will undergo a sustainable mobility transformation known as the limited traffic zone, ZTL. Paired with Paris's Climate Action plan, the ZTL is an ongoing policy intervention that aspires to catalyze dramatic change in Paris's urban context. The ZTL intends to improve urban quality of life, reduce pollution, and contribute to meeting Paris Climate Action targets. The ZTL approach is described as a response to changing social attitudes and technical innovation through the frameworks of the multi-level perspective and the function of urban morphology. Furthermore, it is critical to its success as a sustainable mobility innovation that the multi-dimensional framework of its policy intervention is considered within the context of the complexity of the socio-technical landscape. An in-depth review of stakeholders' and governance challenges provides context for the ZTL implementation in 2024. The potential of the limited traffic zone becoming a model for sustainably transforming mobility is studied and questioned using selected course literature.

The Policy Intervention

Dubbed by the media as promoting a "car-free city" or "peaceful zone," the ZTL policy concept was initially introduced in 2021, with full implementation postponed until 2024 (City of Paris, 2022). The goal of ZTL is to revolutionize the urban spatial context of Paris. Banning most private vehicles would reclaim significant amounts of public space for the city's pedestrians and cyclists. Specifically, the policy initiative limits vehicle traffic in the city's center, the 1st, 2nd, 3rd, and 4th districts (Arrondissements), and parts of the Boulevard Saint-Germain (City of Paris, 2022). In 2015, Paris joined other international cities to conduct car-free days to improve the quality of urban life, at least periodically. A vital concept of the ZTL policy is distinguishing between 'destination traffic' and 'transit traffic.' Destination traffic is defined as traffic with its origin or destination, the central city. In contrast, transit traffic only uses the city center to pass through on its way to another destination and thus can be rerouted if needed. Overall, the city calculates that the ZTL would positively increase urban activity, decrease noise and air pollution, and reclaim public space for other purposes. In introducing the policy, the Paris government hopes to address many environmental concerns and improve the quality of life for the city's residents.

To understand the ZTL, it is critical to understand the current socio-technical system. As author Frank Geels explains, the socio-technical system refers to the complex interaction between society and technology, specifically, "technology, policy, markets, consumer practices, infrastructure, cultural meaning, and scientific knowledge" (Geels, 2012, pg. 471). In application, one must understand how the City of Paris operates today to know how the ZTL will fit with and transform Paris's future socio-technical landscape. Paris has long been a central figure on the world stage, noted for its historic landmarks, international fashion icons, and cultural significance. Covering a geographical area of approximately 105 square kilometers and a population of more than 2.17 million (at a density of 20,500 inhabitants per square kilometer), the City of Paris is a dense, thriving metropolitan area (Statista Research Department, 2023). Paris has experienced significant growth, change, and development over its 2,000-year history. The City's current urban plan dates to the mid-nineteenth century and the Haussmann renovation, which transformed medieval Paris by applying rational urban planning principles, leaving Paris with the notable urban components we experience today (Sloane, 2021). These include wide boulevards, strict building regulations, and improved street connectivity. Furthermore, Haussmann used the concept of interconnecting nodes, reducing city congestion. This city plan was adapted to the rise of the automobile, and city planners estimate that over "50% of public space" is dedicated to car users (City of Paris, 2022). Planners also examined current travel behaviors in the central city to understand how the ZTL would affect and integrate with existing structures and patterns. This analysis reveals a population that has long been moving away from travel by private car toward greater use of public transit systems. According to the Statista Research Department and author Peter Yeung, the share of car journeys for Parisian residents has dropped 45 percent since 1990 and public transit journeys have increased by 30 percent (Yeung, 2022). The declining relevance of automobiles in the city is mirrored by changing attitudes across France. According to recent surveys, only 65 percent of French households say cars are their most common mode of commuting, while 22 percent rely on public transportation and 18 percent on bikes (Statista Research Department, 2023). Likewise, the Statista Research Department reported that the metro Paris area has the highest public transportation use of the city. Even among those in the central city who rely on the automobile, they often have other options available. According to the City of Paris, it is estimated that only 30 percent of transit traffic needs a car, while the other 70 percent use one only for convenience (City of Paris, 2018). This is significant because convenience traffic significantly contributes to automobile use within the city center. Therefore, the introduction of the ZTL is taking place when behaviors, cultural awareness, and technology are changing in ways that support policy intervention.

Introducing the ZTL will influence dramatic change in the urban landscape. Indeed, any similarly radical policy intervention would do so. The ZTL aims to meet environmental goals while adapting to and shaping the ever-changing social climate. While some residents will find the ZTL inconvenient, reclaiming space for other uses promises to significantly impact the city's quality of life and reshape mobility patterns, all while positively affecting the environment of

Paris. Implementation of the ZTL will take an estimated "100,000 cars" daily off the streets of Paris and reduce traffic by "50% of current" levels (Porter, 2022) (Plugavel, 2023). The changes will transform the physical space and redefine the relationship between Paris's urban space and its residents and visitors. Furthermore, shifting traffic patterns have already resulted in a 25% "reduction in nitrogen dioxide," "a drop in noise of up to 2.7 decibels, and a "39% reduction in gasses" in the city. The introduction of the ZTL will do much more to improve the urban environment (City of Paris, 2018). As noted, the ZTL will also directly influence Paris's urban plan by reallocating space to more productive uses, aligning with the Paris Climate Action Plan's goals for efficient land use, shared mobility, and overall promotion of a sustainable urban environment. Moreover, in a journal article examining the air quality, atmospheric conditions, and health implications of the ZTL, Moreno estimated that it would have statistically significant effects on the environment and human quality of life. These include the prevention of over "730 deaths and 3200 [cases of] childhood asthma," which, in economic terms, translates to a "€2.36 billion" benefit and is associated with the reduction of "NO2 and PM2.5 as air pollutants" (Moreno, 2022, pg. 9, 1). The environmental impacts of the ZTL will stretch far beyond what we can measure in air quality metrics to affect human quality of life profoundly. The transformation of the physical space will complement ongoing neighborhood beautification projects, thus further redefining the relationship between Paris's urban space and its users. The shift in Paris's mobility priorities, including increased investment in public transport and cycling lanes, is further supported by Nieuwenhuijsen and Khreis's findings, which suggest that the eco-friendly transportation transition will encourage a shifting toward a more "citizen-focused" perspective (Nieuwenhuijsen & Khreis, 2016). The article highlights the health and social benefits of transitioning away from a car-dependent transport culture in Paris. These benefits will align with and support the ongoing social shift and expansion of transit modes. From changing work schedules to increased cycling and walking, residents' perceptions of urban mobility needs are everchanging. Thus, the ZTL introduction aligns with these developments and reinforces them through changes to the physical space and redefining what makes Paris "Paris."

The Theoretical Framework and Application

Transformative change, like the Paris ZTL, has the potential to create a radial systemic shift within a specific context. Transformative change is typically pursued to advance social and environmental systems by addressing large-scale challenges, thus creating long-term effects and (hopefully) improvements. Furthermore, their established credibility enables theoretical frameworks to support transformative change initiatives and lay a solid foundation for social change. In analyzing the ZTL, we can apply several different theoretical frameworks. First, we can use the multi-level perspective (MLP) to explore the socio-technical transitions triggered by the ZTL. The multi-level perspective proposes that transitions are "non-linear processes" that are the result of the interactions between "three analytical levels" (Geels, 2012, pg. 472). As Geels explains, these three levels include "niches, socio-technical regimes, and exogenous

socio-technical landscape." Furthermore, the MLP theory explains the concept of nested hierarchy and stability within such change initiatives. Niches are "radical innovations" at a protective level from the mainstream (Geels, 2012, pg. 472). Critical components at this niche level are learning, adjusting, and building networks, thus enabling transformative changes to develop. Socio-technical regimes, as Geels explains, represent the dominant systems that are built upon the "alignment of existing technologies, regulations, user patterns, infrastructures, and cultural discourses" (Geels, 2012, pg. 473). Finally, the exogenous socio-technical landscape refers to the "wider context" that influences "niche and regime dynamics" (Geels, 2012, pg. 473). This can include political concerns, economics, and social values.

The second framework worth exploring in connection with the ZTL is the theory of urban morphology and the role of cultural and behavioral perspectives within an urban context. Urban morphology, as defined by Adolphson, is the study of urban design and the structure of such space. Key concepts used to define an urban context's morphology are "spatial data," "character (density, diversity, design, and distance to the city center," and other socioeconomic factors (Adolphson, 2022, pg. 5). Furthermore, urban morphology pairs with social morphology, with both being grounded in the concept of "physical reality's" relationship with "social constructs" (Adolphson, 2022, pg. 3). Thus, the physical conditions of urban context are intertwined with social and behavioral dimensions. The theoretical framework is grounded in the belief that an urban layout influences and is influenced by societal values and the population itself. Such societal values are informed by the role of experimental governance in such a regime. Experimental governance, as VanHoose describes, is an approach that includes the "temporary" use of space to "experiment" with innovative policy interventions (VanHoose, 2022, pg. 1). While there are many more theoretical frameworks that can be applied to examine the rationale for the ZTL, MLP and urban morphology are particularly useful insofar as they can be combined and applied together to assess the transformative potential of the ZTL intervention and its effect on sustainable mobility.

By applying the MLP to the ZTL, much can be discerned regarding the potential transformative impact of the policy and the move toward sustainable mobility. MLP breaks down the complex socio-technical transition and helps identify the potential impacts of the policy intervention. Within MLP, the first level of analysis focuses on the niche radical innovations. While the ZTL is not a niche innovation, given its scale (as Geels would define it), previous experiments that led to the ZTL urban space policy have been niches. Previous supporting niche innovations include bike-sharing concepts, expanded sustainable transport modes, and the car-free days dating back to 2015. These niches offered opportunities and space for testing, developing, and learning technologies and practices. Geels notes that socio-technical transitions are borne of niches that "created deviation from the mainstream." The niches mentioned above were all deviations from the car-centric urban regime (Geels, 2012, pg. 475). Thus, the niches enabled policymakers to understand how changes would affect users and challenge the existing infrastructure.

Moving beyond the niche level to the socio-technical regime, one can see that the ZTL policy faces opposition from the stakeholders in the existing car-centric transportation regime. As described above, the ZTL intends to transform the existing regime into a sustainable urban mobility regime. The MLP framework allows one to predict practices, users' behaviors, and the current mobility regime's response and potential resistance to the ZTL. Furthermore, the MLP helps explain the power dynamics, relevant actors, and behavior changes that will shape the ZTL transition. For example, Paris Mayor Hidalgo, who launched the ZTL, has already been labeled "anti-car attitude" and has heard concerns about lower traffic levels in the city center (Bloomberg, 2022). However, this resistance is predictable given any large-scale socio-technical transition that promises meaningful regime change. Thus, the key is how the ZTL architects and policymakers respond to this resistance to achieve their regime change goals. At one level, the changes can be viewed narrowly as adjustments to public transport schedules and the reallocation of road space. However, the ambitions for ZTL policy intervention are not simply to achieve some minor transition but to be the catalyst for a future regime and alter the socio-technical landscape in Paris (and beyond). The ZTL is seen as a pathway to a comprehensive sustainable mobility system. To be successful, Paris's socio-technical landscape will need to adapt. The ZTL aims to change how society and the urban context function, thus influencing and being influenced by the ongoing evolution of the socio-technical landscape. The MLP framework helps describe and predict the ZTL's transformative potential.

As the multi-level perspective highlights, the success of the ZTL initiative will require a smooth connection between urban morphology and cultural and behavioral perspectives. On the one hand, the ZTL is a product of the shifting cultural and social attitudes. The push for sustainable mobility transitions is a major factor driving the future urban morphology. Thus, critical to understanding the transformative potential of the ZTL is understanding the intersection of urban morphology and urban resident's behavioral perspective. First, urban morphology, as it relates to ZTL, focuses on the redesign, reclaiming, and reallocation of the streets of Paris, which were previously dedicated to automobile users. The ZTL will alter Paris's urban morphology and how physical and social spaces interact. Thus, as it relates explicitly to sustainable mobility modes like public transit and walking, the change to the urban morphology will reshape mobility in the city center and the Paris metropolitan region more broadly. The physical transition will also alter Paris's cultural and behavioral attitudes. From adaptation of mobility to cultural interaction, the ZTL is expected to change how people interact in and with public spaces. As the MLP notes, the ZTL will catalyze a space for innovations applicable to sustainable mobility. The urban morphology transition will also likely have a broader effect on environmental sustainability by decreasing greenhouse gases, noise, and pollution in Paris. However, as with any physical and social transition, ZTL will face challenges in achieving a sustainable mobility transition. As a result of stakeholder resistance to redesigning the extensive car-centric urban context, the change process is unlikely to be completely smooth. However, considering the principles of urban

morphology and its relationship to cultural and behavioral perspectives can help facilitate the ZTL transition. A key factor supporting the transition is that elements of the ZTL concept have already been tested. Moreover, it aligns with shifting attitudes among most Parisians. Government analyses and experimental initiatives have shown that the residents of Paris will be ready for the urban morphology transition. An example of experimental governance demonstrating how the Paris population is ready for the transition is the designated car-free Paris days since 2015 to test and prepare the ZTL intervention. Furthermore, even the ZTL can be seen as an experiment to reshape the urban morphology of Paris's city center to see how the population reacts. Author VanHoose notes how experimental governance can lead to "behavioral, institutional, material, and organizational" shifts (VanHoose, 2022, pg. 2). By changing social interactions and promoting environmental changes; the ZTL will influence and influence the evolving urban morphology. Thus, the ZTL of 2024 can be expected to look quite different from the ZTL of 2026 or 2028. This is because data will be collected as implementation proceeds, leading to adjustments in the program at the same time as public opinion evolves and changes. Critical to successful urban governance is being flexible and listening to feedback. If the City of Paris government wants the ZTL to live up to its ambition of promoting a sustainability transformation, it will have to evolve and change as lessons are learned and new phases are designed.

Governance Challenges and Stakeholders

In any new policy intervention, there is an interaction between stakeholder and governance challenges. As Professor Kaki explains, a core principle in urban regime and governance analysis is understanding how private and public interests are leveraged conjointly to implant governance and policy changes (Kaki, 2023). As guest speaker Isaksson noted, governance challenges related to mobility transitions are defined by the complexities of shaping and guiding transformation while considering and coordinating connections between technological innovation, political policies, and the many different perspectives of stakeholders' interests (Isaksson, 2023). Thus, governance itself is the practice of managing and guiding societies while adjusting to challenges that arise along the way. Further, Haarstad's conceptualization of complex governance includes the exploration of "different types of processes" within an overarching multi-dimensional framework (Haarstad, 2016, pg. 4). Highlighted is the need for interactions between "institutions networks and sociotechnical arrangements." Applying this to the ZTL concept, the vertical process examines the "multilevel governance perspectives" (i.e., from the local level to the national government), while the horizontal process looks at "network and policy mobility perspectives" on the same level (e.g., institutions and the private sector). The infrastructural process concerns the "urban form and the built environment," in other words, how the ZTL will be implemented at a physical level (Haarstad, 2016, pg. 4). In considering Haarstad's multi-dimensional framework, the implementation of the ZTL can be made more effective by developing a critical understanding of stakeholder interests and influence.

Furthermore, it also explains how national goals and local policy can work together. Governance challenges related to the ZTL stem from the ZTL's goal of shifting the dominant mobility regime and extending pressure for sustainable transformation. Thus, governance challenges arise because of the critical consideration of stakeholder interests within the policy decision (in this case, the limited traffic zone).

Stakeholder interest and governance challenges are intertwined and have a causal relationship. When applied to the ZTL, stakeholder analysis can identify the supporters and resistors of the policy intervention. This is essential as it identifies who has a stake in the intervention and to what extent it will influence its outcome. While all stakeholder perspectives are essential to consider, some stakeholders, often those with political power and financial resources, can have a larger voice and greater capacity to influence policy outcomes. This is captured in Haarstad's multi-dimensional framework mentioned above. The relevant stakeholders for the ZTL include, but are not limited to, the City of Paris (local government), France's national government, transport providers, Paris's residents, local businesses, environmental advocacy groups, corporations, and tourism-dependent businesses. Understanding what each brings to the table and their influence on the policy intervention is essential in breaking down governance challenges and addressing stakeholder interests.

First and foremost are the local Paris authorities and the French national government. The City of Paris is the policy's author and will significantly influence its implementation. It will oversee the policy design, implementation, management, and regulation. Because Paris also serves as the nation’s capital, the French national government will also have a stake in the ZTL. As described on its website, the City of Paris's primary goal is to improve the quality of urban life and meet its environmental goals. Regarding governance challenges, the City of Paris is the primary coordinator, given its role as the implementor of the project. Paris transit authorities, themselves local governmental bodies, are significant stakeholders as they will be responsible for developing alternative transit modes and routes once the ZTL is in effect. In Paris, the primary public transportation agency, RATP, is a state-owned company with close connections to the city’s government. Beyond these governmental organizations is the city’s local population. Parisians are not a monolithic group; however, as stakeholders, they hold diverse perspectives depending on their location, income levels, and lifestyles. Consider the impact of location on the resident’s perspective. The ZTL will directly affect the city center and surrounding districts, which are home to residents with higher median incomes and, thus, more significant influence on policy. This starkly contrasts with the outer districts, which tend to have lower median incomes (Renault, 2019). As the Apur mapping tool highlights, these outer districts are often home to immigrant populations, people without college educations, and the unemployed (Apur, 2021). Thus, those who historically have had a more significant influence on policy will likely feel the benefits of the ZTL the most. Moreover, along these lines, there will be a significant difference in how people experience the ZTL depending on the distance they travel to work and their

transportation modes. Other stakeholder perspectives among Paris's residents include community groups such as the Paris Cycling Group (http://pariscyclinggroup.com/) or Mobilité Club France, an automobile club association evolving toward an association focused on all forms of mobility. These are just some community advocacy groups likely to lobby for or against the ZTL. Other governance challenges that will likely arise when hearing the residents' perspective are rerouting traffic and expanded transportation mode equality. Local businesses and private corporations are also critical stakeholders, given Paris's role as the center of the country's economic activity. Some businesses, like restaurants in the ZTL, might support the change as they anticipate increased foot traffic. Others, such as those that support automobiles (e.g., gas stations, repair shops, dealers, etc.), may see the traffic restrictions as a source of harm, mainly if the impact of the ZTL on broader policy initiatives grows. When considering private corporations, it is essential to consider governance challenges arising from private-public partnerships and these firms' financial influence. Given that a central guiding motive for the ZTL is its potential to drive an environmental transformation, environmental advocacy groups such as the International Climate and Clean Air Coalition or local l'Agence Parisienne du Climat will also be essential stakeholders. Environmental advocacy groups can influence policy through public engagement, financial contributions, and connections to government leaders. Finally, the tourism sector is another critical stakeholder, given that tourism makes up "43.6% of the city's total economy" (WTTC, 2023). Paris authorities expect the ZTL to enhance the experience of visiting Paris and thus benefit the industry. However, it may also make the experience of getting to and from the central city more challenging for some. Considering these diverse stakeholder interests provides insight into the many governance challenges the ZTL will face. While the city is responsible for the ZTL's framework, its seamless implementation relies on the productive engagement of stakeholders.

Conclusion

Through the application of an expanded theoretical policy and stakeholder analysis, a deeper appreciation of the challenges and opportunities arising from the radical implementation of the limited traffic zone is possible. The ZTL can potentially trigger the sustainable mobility transformation its promoters envision. From theories like the multi-level perspective, urban morphology, and experimental governance, a detailed look shows how the policy of the ZTL can fit into Paris's socio-technical landscape. Furthermore, these principles highlight the interconnections between different policy dimensions while recognizing that they will evolve continually. The physical and social life of the socio-technical regimes and broader changes to the landscape are intertwined in all this. Through extensive research, policy planners have determined that 2024 is the right time to implement the ZTL fully. From ongoing technological changes to culture shifts and increased emphasis on environmental protection, the overall environment supports the ZTL policy intervention. This is affirmed through stakeholder analysis and its influence on governance questions. Without a doubt, the limited traffic zone will be

challenged initially by some stakeholders. However, its firm foundation in changing social and technical trends will allow it to succeed and adapt to challenges. The ZTL in Paris promises to be a landmark transformation, demonstrating how a city's commitment to sustainable development can be achieved through a sustainable mobility transformation.

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