

Visualising Rhythm and Soundscape in Everyday Bus Journey in Medellín, Colombia

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ABSTRACT

This research delves into the intricate world of urban mobility, with a specific focus on the daily experiences of bus travel in the city of Medellín, Colombia. Through a unique blend of phenomenological analysis, visual mapping, and soundscape exploration, it's possible to unravel the complex web of societal practices that shape public transportation systems, precisely through three key methodological strategies: perception, listening, and normative reading. These strategies provide a multifaceted understanding of bus travel, ranging from the minute gestures of passengers to the broader regulatory frameworks that govern this mode of transport. Everyday life is embraced as the cornerstone for understanding society. Public transportation, particularly the buses of Medellín, encapsulates the paradoxical interplay between established norms and spontaneous rhythms. This research dissects the "molar" aspects, marked by urban structures and systemic regulations, and the "molecular" intricacies interwoven in the minutiae of daily travel. Passengers and drivers share a unique relationship, with drivers assuming a constant vigilance role through mirrors. In contrast, passengers can engage in diverse visual practices or immerse themselves in the captivating scenery. The bus's interior, filled with reflective surfaces and transparent elements, creates a visually stimulating environment where multiple images and sounds coexist. Graphic methods aim to illustrate the correlation between molar and molecular urban elements and the intricate network of public transportation. In our pursuit to incorporate a temporal dimension, we introduced innovative tools such as timelines and sound maps within our cartographic explorations, presenting both new opportunities and challenges.

Keywords: Public Transport Experience, Rhythmanalysis, Transport Soundscape

1 Introduction

The movements within the Metropolitan Area of the Aburrá Valley, of which Medellín is the central city, hold great significance in the urban life of the region's inhabitants. The city's geomorphological conditions and its expansion process position bus travel, that is, public *collective* transportation, as a crucial mode in complementing *mass* transit forms like the Metro. Public collective transportation is currently undergoing a rationalization phase of its vehicle fleet to comply with metropolitan integration strategies such as the legal framework of Business Collaboration Agreements. The time spent inside these transportation vehicles, averaging around 36 minutes, is often considered wasted time. Solutions focused solely on efficiency and reducing travel time have sidelined the experiential aspect from planning interests, and so the possibilities that the consideration of experiential elements could bring to the construction of urban knowledge.

In this context, the question arises about the experience of bus travel, understanding it as the foundation of the production of the collective public transportation space. This question led to the formulation of the research project "Experiences of Public Collective Transportation Travel from San Antonio de Prado, Medellín: Buses, Gestures, and Spatialities," conducted to earn a master's degree in Socio-spatial Studies at the Institute of Regional Studies (INER) at the University of Antioquia, Colombia.



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This article is a part of this research, whose focus was previously presented at the 8th International Visual Methods Conference held at Sapienza University in Rome in May 2023.

The research frames the experience of public collective transportation travel within a contradiction between the molarity and molecularity of urban organizational forms, concepts drawn from Deleuze and Guattari's theory [1]. It seeks to deepen this understanding through a set of methodological strategies rooted in Maurice Merleau-Ponty's *Phenomenology of Perception* [2]. Nevertheless, it has as its theoretical background the concept of everyday life according to Henry Lefebvre [3] and some considerations by Pierre Bourdieu [4] that contributed to shaping the research object, regarding the legitimacy of research conducted in microsociological spheres. On the other hand, the focus of the 8IVMC on the visual aspect has been an invitation to highlight this dimension of the research. Therefore, this article aims, first, to showcase how visibility operates for passengers and drivers during the journey and, second, how this visibility can become a tool to describe other types of bodily experiences such as the rhythm of boarding the bus and listening to the soundscape through cartographic construction.

Firstly, it will discuss the strategies employed for the development of phenomenological research: perception, listening, and reading. Secondly, the theory according to which these strategies operate. Thirdly, the analysis and discussion of the findings from this research process will be discussed. Lastly, some conclusions related to the importance of the phenomenological perspective within urban and socio-spatial studies will be drawn.

2 Materials and Methods

The place of phenomenology in this research implies a theoretical and methodological perspective that allows us to approach the practices of everyday life based on experience. This, in turn, is understood as a complex process whose knowledge is acquired at different scales, associated with the nature of the research object. Firstly, the question of experience necessitates delving into the minimum scale of practice: gesture, the body, the sensory aspects – what one sees when traveling. Therefore, the first of the methodological strategies employed focuses on the realm of perception as “the foundation of knowledge” [2], through what's been called as perceptual journeys where concise words referring to what was seen, smelled, heard, touched, and tasted in the spatialities of the journey were collected. The inputs gathered during perceptual journeys included photographs, audio captures, wrappers of candies sold inside the buses, geographical coordinates, and passenger counts. Subsequently, however, another scale of experience, as an accumulation of knowledge, settlement, and the constitution of practices over time, must be considered. For this purpose, it was useful to listen to the narratives of other individuals, particularly eight frequent passengers and four bus drivers who have witnessed the transformation of transportation vehicles. However, placing the experience of bus travel within the context of a public collective transportation system undergoing rationalization requires extending the methodological strategies to the normative scale. To achieve this, reading metropolitan and district regulations and decrees has proven helpful.

Perception, listening, and reading are, therefore, the three main strategies for understanding and highlighting, among other aspects, the production of visibility within this practice. On the other hand, the exercise of rhythm analysis required cartographic production as much as reading music requires a score. To comprehend rhythm analysis, it is necessary to visualize the relationship between space and time, seeking differences even amid the daily repetition of practices. Cartography is constructed using the inputs and materialities obtained through the three previously mentioned strategies.

3 Theory and calculation

Everyday life, understood as a guiding thread to gain knowledge about society [3], is the space for asserting the power of practices as a source of knowledge. It is fundamentally linked to modernity and occurs in harmony with its repetitions. Thus, studying urban transportation, delves into a world of contradictory rhythms between the established and the spontaneous, whose melody is produced by experiences and appropriations, in the formation of an embodied and cognizable *travelling know-how* [5], achieved through perception, reproduction, and reflection on its timing. The convergence between the relative autonomy of public collective transportation and the binary, linear, and concentric forms of hard segmentation [1] practically outlines the research's structure into two fronts: the molecular and the molar. Everything that can be perceived lies in this sway.

The molar has specific forms of expression: the urban, the systemic, and the recoded operate on the travel experience with a rationalizing hardness, seeking to dominate time and space during the journey. Urban molarity is expressed in historical forms of organization, consolidating origins and destinations, centers and peripheries, and routes and morphologies, embellished with specific architectures and infrastructures. Systemic molarity implies the incorporation of new devices within the travel space aimed at efficiency and safety, whose existence targets the senses, complementing and directing passengers' and drivers' practices toward impersonality: music and radio have been replaced by the omnipresent continuous sound of the engine and the beeping of sensors, composing a soundscape typical of this transportation rationalization phase. Recoding molarity, naturally visual, turns the travel space into a graphic territory suitable for conveying selected messages: advertising, behavioral norms, and videos with moralizing messages. As seen, molarity directs itself at the senses inside and outside transportation vehicles, aiming to become molecular: "Good or bad, politics and its judgments are always molar, but it is the molecular and its assessment that makes it or breaks it" [1].

Given this panorama, a reflective visuality is necessary and must transcend perception, as each perceived thing has the ability to inform about the composition of the world. As Gillian Rose notes, a critical visuality is necessary: "an approach that thinks about the visual in terms of the cultural significance, social practices, and power relations in which it is embedded; and that means thinking about the power relations that produce, are articulated through, and can be challenged by, ways of seeing and imaging" [6]. In this sense, *rhythmanalysis* [7] becomes a critical visual methodology once the steps of a choreography marked by the hours of the day, the seasons of the year, and the collective vibration of the city are graphed on the cartography. Journeys, seemingly monotonous and repetitive, through the city, contain, in detail, the temporal differences where spatial orders and their molecular contradiction manifest. This theoretical and methodological frame of public collective transportation experience has led to structuring the research objectives in a quest for the experiential elements that constitute the mechanics of travel space production, and through this, unveiling the manifestations of the molar and the molecular in its three facets.

4 Results and discussion

4.1 Mirrors, Reflections and Attention Captures: What Is Seen During the Journey?

It is important to start this section referencing a crucial article by David Bissell [8] where he discusses the variety of visual practices during train travel in Great Britain. Bissell's attention to the passengers' focus and mesmerizing by the landscape has shed light on the roles of passengers and drivers inside the bus, in our case: the responsibilities of drivers have multiplied their eyes during the journey through objects like mirrors and cameras, demanding their constant vigilance (Figure 1). Conversely, passengers can stare at the moving mountains, the chaotic landscape of the city in motion, close their eyes

and even sleep. But also they can choose to meet the eyes of the drivers and fellow passengers on the mirrors and the reflective surface of the windows once night falls, allowing their attention to be captured by the interior of the bus, adorned with codes, messages, colors, shapes, or by their own visual focus on their cellphones.



Figure 1: *Mirrors, cameras, and driver's landscape above the traffic. Bus 098, Driver from route Prado Minorista (Limonar), 9th June 2022, 12:15 p.m. Photo by the author.*

The interior of the bus is made up of reflective and transparent materials, causing the sense of sight to immerse itself in multiple images. The mirror, according to Lefebvre[9], is an "evanescent and fascinating" object, distinct from any other, with two characteristics that correspond to its function within the bus: first, it has a dual character, being transactional, directing the gaze to something else, while also serving as a purpose in itself; second, it is an object in space that, by its nature, can provide information about it.

When the view extends outside the vehicle through the windows, the roles between passengers and drivers again emphasize their differences, starting with the seats they occupy inside the bus. Drivers, leaning over the road in their seats, have a landscape shaped by traffic and the width of the road: attention, risk, and safety are central to the landscape feelings of this occupation. Conversely, passengers, who can move relatively freely inside the rest of the bus, create a landscape of a larger scale when their gaze rises to the moving mountains, ascends on bridges toward the horizon, or focuses on what is happening along the bus's route. Passengers produce a landscape of anticipation.

4.2 Visuality as Graphic: Rhythm and soundscapes

The rhythm of public collective transportation is closely related to the mobility conflicts originating from sharing the road with various modes of transportation. The combination of movements by such diverse actors results in a rhythm characterized by inconsistency and unpredictability. However, patterns that arise amid repetition cannot be ignored, particularly when associated with other spatial-temporal scales of the city and the routes taken by buses. Drivers are aware of the most critical points along the route and know where the fluidity of their journey is interrupted or delayed at different times of the day. They constantly compare the real travel time with the schedule provided by the company, confirming the time difference between the proposed and actual rhythms. While the suggested transit points by the company suggest constant flow regardless of the areas along the journey, the reality is that dynamics in different zones, the time of day, the day of the week, and even the season of the year define the rhythm of a bus journey.

The rhythm analysis exercise conducted to understand this dynamic helps identify the starting points along the route, highlighting urban nodes significant areas and landmarks that require public

transportation coverage, but also places completely transformed by the bus's passage. For this, passenger boarding on the San Antonio de Prado - Minorista route (origin-destination) was documented (Figure 2). A timeline is placed above showing the departure and arrival times of the bus at its destination. Each line represents a minute. On the route map, the passenger boarding locations are marked with gradually changing colors from green to red. A line is drawn between the map and the timeline, corresponding to the boarding time, creating a proposal for space-time visualization. Three things can be deduced at a glance: first, the density of the lines indicates a high frequency of stops for a certain stretch of the route. Second, starting from the map, diverging lines indicate less distance covered over a longer time. Third, converging lines indicate more distance covered in less time. Lastly, it's worth noting that the linear morphology of the Valle de Aburrá mobility corridor has been useful for this graphic representation.

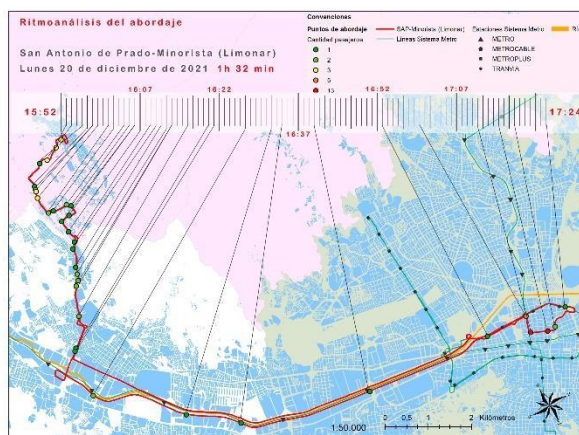


Figure 2: Rhythmanalysis of a bus journey, 20th december, 2021. Made by the author.

The second map (Figure 3) results from a comparison between the passenger boarding recorded and a dispatch on June 8, 2022, marked with magenta points. Lines in red have been drawn between these points and the timeline, allowing the comparison with the boarding rhythm, revealing a delay where the travel time expected by the company between origin and destination is much shorter than reality, with a gap of nearly 30 minutes.

In the first stretch, stops hardly exceed two minutes of difference because the bus still has space, and there isn't much congestion on the road. The journey in this stretch takes place just before the peak hours (between 3:52 and 4:20 p.m.). Travel rhythm here is fluid but with a stop every minute. Someone waves their hand, the driver reduces speed, orders the doors to open. Passengers board with money in hand, pay, the driver receives, counts, gives change, delivers, and the passenger continues to find a seat. On the highway, the stops decrease as it is an infrastructure for speed, with most stops aligning with Metro stations, suggesting the indirect effect of urban morphology on transportation rhythm [10].

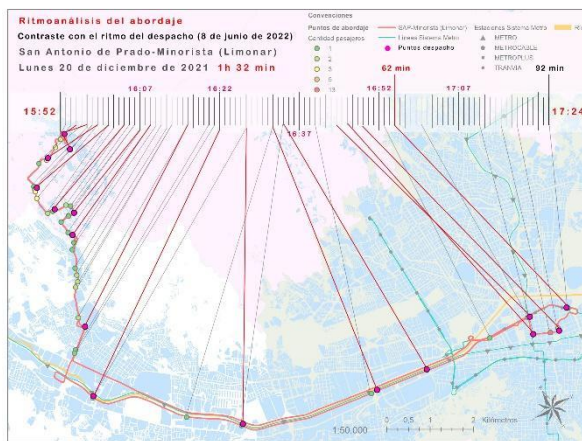


Figure 3: *Rhythmanalysis comparing expectations from the corporation, 20th december, 2021. Made by the author.*

Once the bus reaches the city center traffic on the road is dense, and sidewalks are traversed slowly by people browsing shop windows, inquiring about prices, and carefully avoiding merchandise carts and sewer openings. Although passengers board constantly, defining both the destination and the new point of return, it takes 11 minutes to cover four blocks, make two stops, and board eight passengers. The rhythm has changed: at the start, four blocks equaled about a minute, two stops, and seven passengers approximately. The number of passengers and stops is similar, but the time elapsed is eleven times greater, influenced by the time of arrival in this area and the presence of informal street vendors and their merchandise, increasing the congestion. Subsequently, the bus enters Cundinamarca Street and moves at a slow, exhausting pace, with the atmosphere filled with honking, drizzle, and the stress of the December rush hour. Twenty-six people run desperately toward the bus and board even without having time to put up their umbrellas: the bus becomes a refuge. They board between 5:11 and 5:15, with a three-block difference. The pace continues slowly until the final destination.

The mechanics are indeed relative when studying rhythm: "Rhythm is not opposed to chaos; rather, it is a process that emanates from the relationship between [worlds] and it, occurring in such a way that there are certain resistances and the creation of new balances or counterpoints" [11]. The rhythm of travel is influenced by speed limits, traffic density, and the bus's mission to pick up passengers, leading to changes throughout the route. Predictability depends on the variable being considered, that is, the type of time influencing it, as well as well-established properties of the city it travels through, including infrastructures, architecture, and the positioning of locations in the collective logic. Of course, chance and luck, which can never be described or predicted, play a role, making the music always different and the experience never-ending.

Now in the second instance, this research has led to an understanding that rhythm also produces a soundscape, and through a visual representation of this soundscape, involving attentive listening, we can complement the analysis of the rhythm of the boarding moment as previously shown. This is particularly relevant in relation to the effects of the bus's material characteristics and mechanics. It is known, thanks to the reading of Murray Schaffer [12], that "all visual projections of sounds are arbitrary and fictitious." However, as the author also states, this representation is sufficient for many types of investigations, including this one, where an experiment has been conducted with data and information produced by phenomenological perception of sound.

Figure 4 represents graphic-level recordings from inside the bus. In this section of the journey between a Metro station and San Antonio de Prado, the bus climbs a slope at 8:00 p.m., a time with low

traffic. The continuous ascent, not without effort, is visible in the regular dynamics of peaks and valleys in the red sections of the image. Here, we can observe that, despite the "flat continuous line in sound" [12] introduced by the industrial revolution and specifically the internal combustion engine, the relation with topography creates this dynamic in sound, which can be perceived as a strong, disturbing swell.

The most defined descents, marked within the green boxes, highlight other events: sound cues such as sensor signals and the squeal of the doors opening, which coincide with stops and passenger boarding. The longest of these occurs in the final section of the graphic, marked in yellow, allowing the emergence of a radio jingle and passengers' voices, reminding us of the humanity of this space. The line with greater amplitude, marked in pink, corresponds to the sound of the horn, used as a greeting between two buses, also emphasizing the humanity of these machines.

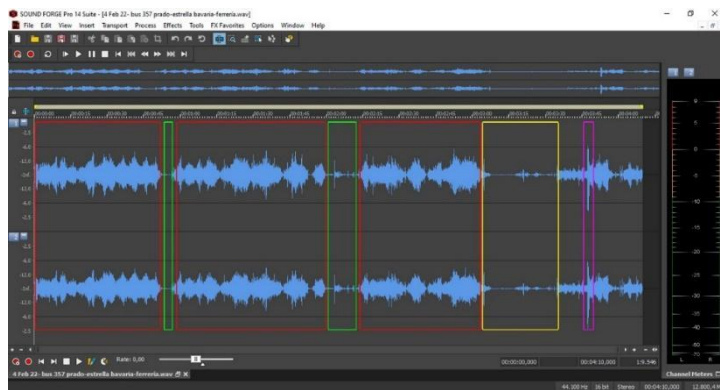


Figure 4: Graphic level recordings from inside bus 357. 4th February 2022.

In contrast to the acquired rhythm, which results from the combination of mechanics and topography as evident in the previous graphic, the sound waves in this recording from the motorway (Figure 5) show a more uniform background produced by the engine gliding along the freeway. Here, the relationship between the machine and urban morphology becomes more apparent. During the stop, marked in yellow, a greater clarity of sounds emerges, forming the audible composition of the journey: music, sensors, and the passage of other vehicles at full speed.

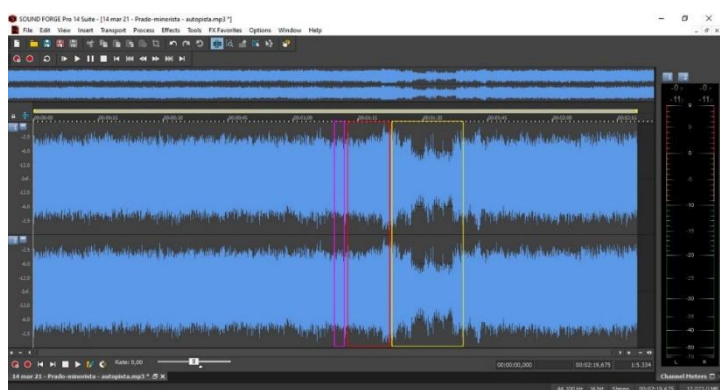


Figure 5: Graphic level recordings from inside a journey through the highway. 14th March 2021.

5 Conclusions

While the graphic construction of rhythm analysis based on passenger boarding points allows for a metropolitan scale of urban molarity, analyzing rhythm through the soundscape delves into the scale of detail and choreography inside the bus. Here, gestures like ringing the bell, thanking the driver, and opening the doors become relevant. Therefore, the combination of these two exercises recreates the interplay between the molarity and the molecularity of public transportation journeys in Medellín, a contradictory structure and relationship that has been described both theoretically and methodologically. In this way, it is

possible to demonstrate that a phenomenological approach to everyday reality, especially the experience of public transportation travel, can reveal socio-spatial relationships inherent to the travel space during the phase of rationalization that public collective transportation is undergoing in the city. These relationships might remain invisible with a focus solely on efficiency.

6 Declarations

6.1 Competing Interests

The author declares that there is no conflict of interests regarding the publication of this paper.

6.2 Publisher's Note

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