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Infrastructure Anthropology: Inequality of Access and Mobility

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Abstract: Infrastructure development is often positioned as a symbol of urban progress, yet in practice, it generates spatial inequality, especially for marginalized communities. This study aims to explore how infrastructure is produced, interpreted, and contested in the daily lives of suburban communities in Makassar. Using a critical ethnography approach, the research was conducted through participatory observation, in-depth interviews, and field documentation across several urban peripheries. The findings reveal that infrastructure in Makassar functions as an exclusive space, reinforcing social inequality. Affected residents—such as coastal fishermen and informal workers—are often excluded from planning processes and face limitations in access and mobility. However, communities respond with various survival strategies, including the informal repurposing of infrastructure spaces and symbolic resistance. These insights emphasize the need for inclusive, participatory, and socially just infrastructure planning.

Keywords: Space production; Infrastructure; Spatial inequality; Urban Anthropology

Introduction

In the general sense, infrastructure is often understood as a rigid physical element—the highways, bridges, terminals, railroads, and megastructures that mark the progress of cities. However, for those who live during the development itself, infrastructure doesn't just talk about connectivity and mobility. It is a living space. It exists as a social field where various interests meet, intersect, and even collide. This is where infrastructure anthropology becomes important: an approach that reads not only infrastructure from its form, but from how it is produced, lived, contested, and interpreted in everyday life (Niewöhner, 2015; Winthereik & Wahlberg, 2022).

Makassar, as one of the metropolitan cities in eastern Indonesia that has experienced an acceleration of development in the last decade, is an interesting space to be researched. The central and regional governments are competing to create "connectivity" through the construction of toll roads, overpasses, port revitalization, and double rail projects (Khaerah et al., 2021; Rohadi et al., 2024). However, behind the glittering of those projects, comes a

big question mark: who will benefit the most from this development? Who was sacrificed? And how do the social lives of citizens change when the spaces they know are replaced by fast lanes and concrete boundaries? (Polyakova & Vasilyeva, 2016).

These questions underlie the urgency of this study. Inequality of access and mobility is not just a technical problem or a matter of distribution of facilities. It is a manifestation of an unbalanced power relationship in the process of space production (Janatabadi & Ermagun, 2024; Sun et al., 2017). In the context of Makassar, we can see how infrastructure projects often come without meaningful participation from affected residents. The sea where fishing is sought turns into a shipping route. The small street where the children's playground was replaced by a flyover. The old terminal that was a meeting point for residents was converted into a sterile space for logistics. These changes are not only physical, but touch social structures, collective memory, and a sense of belonging to space (Colacios & Mendoza-Arroyo, 2017; Ramos-Vidal & de la Ossa, 2024).

Theoretically, this study departs from Henri Lefebvre's framework on space production. Lefebvre (1991) states that space is never neutral, it is always the result of social and political relations. The production of space is a form of expression of domination: those who have power determine how space is formed, who can access it, and who should be eliminated (Allen, 2024). In the context of infrastructure development, the state and capital are the dominant actors. The state comes with its regulatory legitimacy, while capital carries the logic of accumulation and efficiency. Together, the two create a technocratic and economical space, putting aside the socio-cultural dimension that has been the pulse of people's lives (Allen, 2024).

Beyond the political economy perspective, it is also important to recognize infrastructure as a form of social infrastructure. As Klinenberg (2018) explains, social infrastructure refers to the physical spaces and organizational structures that facilitate social interaction, mutual support, and community resilience—such as markets, parks, libraries, and informal gathering spots. In Makassar, spaces like night markets under flyovers, makeshift terminals, and communal benches serve as vital nodes of social life, especially for marginalized communities. These informal and often overlooked infrastructures function not merely as spaces of survival, but also as arenas of social reproduction and solidarity. This aligns with Bourdieu's (1984) concept of social space as a structured field shaped by the distribution of economic, social, and cultural capital. Infrastructure, in this sense, becomes a contested arena where different actors mobilize various forms of capital to access, interpret, or transform space. Thus, the study of infrastructure must include not only its material dimensions but also its role in structuring and sustaining everyday social life.

David Harvey (2001) adds a critical perspective to the concept of "accumulation by dispossession"—a process in which physical development is used as a tool to expand capital

accumulation, utilizing taking over space previously owned or used by vulnerable groups (Fedorov & Fedorov, 2018; Rehberg, 2021). In this case, infrastructure is no longer an instrument of public service, but a commodity that is contested. Meanwhile, Pierre Bourdieu's concept of social and symbolic capital helps to understand how inequality of access to infrastructure is not only a matter of money or distance, but also a matter of knowledge, technical language, social networks, and the courage to claim space (Atkins et al., 2010; Howes & Robinson, 2006).

However, although the theoretical basis for space, power, and inequality has grown rapidly, there are still gaps in studies that highlight in depth how the experience of space during infrastructure development is understood by people in cities such as Makassar (Akil et al., 2020; Surya et al., 2021). Many previous studies have focused more on the technical aspects of planning, project management, or macroeconomic impacts. In fact, on a micro-scale—in narrow alleys, under bridges, and traditional markets—there is a process of negotiation and resistance that reveals rich and complex social dynamics (Jönsson, 2015; Thomson et al., 2024).

This study seeks to fill that gap. With an anthropological approach, this study delves into how infrastructure is understood, interpreted, and lived by the people of Makassar. He will not only talk about infrastructure as a result of policy but as an arena of life full of friction. This is where the novelty of this research lies—combining criticism of space production with citizen voices that have not been heard in the development discourse (Niewöhner, 2015; Winthereik & Wahlberg, 2022).

More than that, this paper seeks to show that the community is not a passive party that only receives the impact of development. Amid inequality and limited access, they develop survival strategies, create alternative spaces, and build counter-narratives. From rat streets and flyover bottom night markets, to protest murals on project walls, everything shows that space is a constantly reproducing field of contestation (Chowdhury & Gow, 2024; Hickey & Kothari, 2009).

Structurally, this article will be divided into several main sections. After this introduction, the second part will review the theoretical framework underlying the analysis, covering the concepts of space production, social and symbolic capital, and actor-network theory (Ye et al., 2017; Yougang, 2010). The third part will discuss the methodology used in the research, with an ethnographic approach and citizen narrative as data centres. The fourth part will present the findings in the field, followed by an in-depth analysis of the forms of inequality, spatial exclusion, and emerging forms of resistance. This article will close with critical reflections and recommendations for spatial justice-based policies (Fetterman, 2015; Tshabangu et al., 2022).

Thus, this article is not only an academic contribution to the study of infrastructure anthropology, but also an advocacy tool to encourage more equitable, participatory, and humane development. Because, in the end, space is not just about what can be built, but about who can live, move, and feel owned (Niewöhner, 2015; Winthereik & Wahlberg, 2022).

Methodology

This study uses a qualitative approach with a critical ethnographic design. This choice is based on the need to understand infrastructure not only as a physical object, but as a social space that is produced, experienced, and contested by diverse actors. Ethnography allows researchers to dive into people's daily lives, hear voices that are often not represented in official documents, and capture the cultural dynamics that shape the relationship between humans and space. In the context of Makassar, which is the location of the research, this approach is very relevant to reveal how infrastructure development is understood by residents during a massive urbanization process.

This study employed multiple data collection techniques including in-depth interviews, participant observation, and field documentation. The research was conducted in urban-suburban locations in Makassar, particularly in Tallo, Tamalate, and under the Pettarani flyover. A total of 27 informants were selected using purposive and snowball sampling methods. These included coastal fishermen, informal workers, relocated residents, and local officials. The diversity of informants provided a rich and contextual understanding of how infrastructure development affects different community groups.

This research was carried out through several main stages. The first stage is an initial observation conducted for one month to recognize the social terrain and determine strategic observation points. The second stage is data collection through in-depth interviews, direct participation in community activities, and visual and narrative documentation. The third stage is the data analysis and interpretation stage, where the results of the findings are studied in depth using a predetermined theoretical framework. Finally, critical reflection is carried out on the position of the researcher and involvement in the research process.

The research subjects in this study are individuals and community groups who are directly or indirectly affected by infrastructure development in the urban-suburban areas of Makassar. They cover a wide range of backgrounds: coastal fishermen who have lost access to the sea, street vendors affected by the relocation project, residents living under flyovers, to village officials who serve as liaisons between the government and residents. The object of the research is the social practices, narratives, and representations of spaces formed around and as a result of infrastructure development.

The research indicators are compiled based on the dimensions of access and mobility inequality. Some of the key indicators include: (1) community involvement in the infrastructure planning process; (2) changes in the function of post-development spaces; (3) the level of affordability and utilization of infrastructure by the community; (4) forms of resistance and adaptation of residents to new infrastructure; and (5) perception of spatial justice. These indicators are formulated to capture the extent to which infrastructure is understood, accepted, and challenged by local communities.

The data sources in this study consist of primary and secondary data. Primary data were obtained through in-depth interviews with key informants, participatory observations, and field recordings. The data collection technique was carried out in a triangulation manner, namely by combining interviews, observations, and documentation to strengthen the validity of the findings. Interviews are conducted in a semi-structured manner, allowing flexibility in digging up information and keeping the direction according to the indicators that have been set. Meanwhile, observation is carried out not only as a passive observer, but also with direct involvement in citizens' activities—such as following the flow of the night market, interacting at patrol posts, and listening to informal discussions at coffee shops.

The determination of informants is carried out in a purposive and snowball manner, with the criteria for informants being those who are involved or affected in the process of significantly developing infrastructure. The initial informants were selected based on the recommendations of local figures or initial contacts in the field. Furthermore, the informant network develops through directions or recommendations from previous sources. This technique was chosen to ensure a diversity of perspectives and reach voices that are often on the fringes of formal discourse.

Data analysis was carried out with a thematic-qualitative approach. This process begins with the transcription of interview results and field notes, followed by open coding to find patterns, meanings, and relationships between themes. The data were then interpreted using the theory of space production (Lefebvre), the concept of accumulation by dispossession (Harvey), and the theory of capital and habitus (Bourdieu). Actor-network theory (Latour) is used to analyze the interconnectedness between human and non-human actors in shaping infrastructure spaces. This approach allows for a holistic understanding of the dynamics of space production and the inequality of mobility access.

Research ethics are an integral part of this process. Each informant is asked for consent to be interviewed, with a clear explanation of the purpose of the research, the right not to answer or stop the interview at any time, and a guarantee of identity confidentiality. In conducting research, researchers maintain an open attitude, respect local values, and avoid exploiting data for interests outside the academic framework. In addition, the

researcher is aware of his social position as an outsider and reflectively notes how his presence might affect the dynamics being studied.

The selection of this method was assessed following the purpose of the study: to understand in depth how infrastructure development is produced and interpreted in the daily lives of suburban urban communities. Critical ethnography not only uncovers what is visible but also dismantles the power structures hidden behind development projects. By prioritizing citizens' experiences as the main source of knowledge, this study seeks to present an analysis that is not only representative but also empathetic to the social realities faced by society.

Result and Discussion

Space Production and Inequality of Mobility Access

From the results of observations and interviews in several urban areas on the outskirts of Makassar—such as the coastal area of Tallo, under the Pettarani flyover, and the rail line around Tamalate—it is clear that infrastructure development is not present neutrally. Large projects such as toll roads and logistics lines are built with the narrative of efficiency and growth, but in practice create exclusive spaces.

Field data shows that lower-class communities have limited access, both physically and socially, to the infrastructure built around them. A coastal resident, Pak Arifin (52), who was affected by the port reclamation project, said in a bitter tone:

"We only heard news from outside that a port would be built. No one came to ask for an opinion. Now our sea is a place for ships, not a place to find food."

This quote reflects the inequality of the bargaining position of the community in the process of space production. They are not only spatially excluded, but also epistemic—their knowledge and experience are not considered important in the planning process. This process is in line with Lefebvre's concept of spatial representation, in which the dominant actor creates the definition of space through maps, numbers, and regulations, while society is merely the object of that system.

Representation of Space and Dominance of Power

Field findings also show how infrastructure spaces are technocratically represented in planning documents. RTRW zoning maps, regional plans, and TOD (Transit Oriented Development) designs are made with an abstract approach, ignoring the social realities of the residents. In one case in Tamalanrea, a double rail built to "improve connectivity" actually cut off residents' access to local schools and markets.

Mrs Lisna, 38, a housewife who lives around the tracks, stated:

"In the past, we lived across the street from the market, now we have to turn far because it is covered by a high fence. My son is late for school because the shortcut is closed."

The space that was initially fluid and inclusive has now turned into segmented and exclusive. This shows how the representation of formal space often ignores the lived space of society, as Lefebvre described. In this context, the results of this study support Harvey's findings about "accumulation by dispossession", where infrastructure becomes a tool to get rid of vulnerable groups in the interests of capital.

Practical Use and Survival Strategies of Citizens

Even though the infrastructure space is designed top-down, the community does not necessarily submit just like that. They develop subtle but effective survival and resistance strategies. Under the Pettarani flyover, residents created new social spaces: coffee shops, informal motorbike parking lots, and even small stages for community performances. This shows that space is not only produced from above but also recreated from below.

Direct observation shows that this activity takes place every afternoon until night. Children play bicycles between concrete pillars, while fathers sit on makeshift wooden benches while drinking coffee. This is in line with Latour's view in Actor-Network Theory that space is the result of a network between humans and objects—roads, poles, lamps, and chairs—all of which contribute to producing the meaning of space.

Habitus and Social Capital in Interpreting Infrastructure

The results of the study also show that differences in the use and meaning of infrastructure are greatly influenced by the habitus and social capital of citizens. Groups with low educational backgrounds, unfamiliar with digital systems, or living in informal settlements, often feel unfamiliar with new systems such as automated bus stops, e-ticketing, and transportation applications.

Mrs Aminah (56), who lives near the modern terminal, complained:

"I am confused that everyone has to use a cell phone. Just wanting to take the bus is a hassle. I'd rather ride pete-pete, I can give you money right away."

This indicates that even though infrastructure is physically present, it is not necessarily culturally available. Bourdieu explained that symbolic dominance can occur through technical and technological language that marginalizes those who do not have enough cultural capital. Therefore, modern infrastructure has become exclusive to some residents, even though it was built in the name of public interest.

Comparison with Previous Studies

These findings are in line with previous studies that have highlighted the disconnect between spatial planning and the social needs of citizens. Research by Kusno (2013) in Jakarta and by Silver (2015) in Lagos shows that infrastructure is often an instrument of social class separation and not a tool of equity. However, this study brings novelty in the context of Makassar—a city with a colonial history, hybrid architecture, and unique coastal urbanization.

The local context shows a different dynamic: citizen resistance is not always present in the form of open protest, but rather through the replenishment of space left by the state. Residents turned empty terminals into markets, inspection roads into bicycle lanes, and sidewalks into places of informal economy. This shows that the production of space is always contestation and creativity.

Interpretation and Social Implications

The findings confirm Lefebvre's notion that space is a product of social relations and political domination, as residents are excluded both spatially and epistemically. Harvey's concept of accumulation by dispossession is also evident, where infrastructure projects displace vulnerable communities for capital interests. Bourdieu's ideas about habitus and symbolic capital explain why certain groups, lacking technological literacy or cultural familiarity with modern systems, are marginalized despite physical proximity to infrastructure. These observations align with previous studies in Jakarta (Kusno, 2013) and Lagos (Silver, 2015), emphasizing that infrastructure often reinforces, rather than resolves, spatial inequality.

The data collected shows that infrastructure development in Makassar has created new forms of spatial exclusion. People who do not have private vehicles, are unfamiliar with digital systems or live in informal areas, experience limited mobility. Those who have access are not only geographically close, but also those with adequate economic, social, and cultural capital.

But behind that, there is also the potential for local solidarity and innovation that should be appreciated. In some villages, residents formed community transportation networks, shared vehicles, and built emergency bridges to maintain lost access. This shows that inequality can be combated, as long as there is room for participation and recognition of local values.

Further Research Direction

This research paves the way for further studies on the relationship between space, power, and social class in the context of Indonesia's urbanization. In-depth research can be

conducted on gender and disability aspects in access to infrastructure, or on the role of NGOs and citizens' movements in navigating spatial inequality. In addition, the digital ethnography approach can also be applied to see how technology contributes to shaping the spatial experience of urban residents.

Conclusion

Infrastructure development in cities like Makassar not only creates roads, bridges, or terminals but also reshapes how space is lived and interpreted by the community. This research shows that infrastructure is not a neutral entity that stands alone, but is the result of a social process filled with power relations, representation, and negotiation. In seemingly orderly, hidden dynamics are dynamics that are often invisible in formal discourse: marginalization, adaptation, and resistance.

The main objective of this study to understand how infrastructure is socially produced and how people experience it in their daily lives has been achieved through a grounded ethnographic approach. Data and findings show that dominant actors such as the state, capital, and technocrats have a large role in determining the direction and shape of space. However, society has never been truly passive. Amid limitations, they construct meaning, create gaps, and respond to inequality in ways that often go unnoticed by policy. The production of infrastructure space has been shown to reinforce inequality, especially in terms of access and mobility. Those with economic and symbolic capital enjoy connectivity, while marginalized groups face challenges in simply moving spaces or maintaining their living spaces. At the same time, however, the community has also shown an extraordinary ability to re-read space: from under flyovers that become social spaces, to inspection roads that are transformed into alternative economic paths. This proves that space is never final—it is constantly being produced and negotiated.

More than just explaining the conditions on the ground, this conclusion confirms that infrastructure needs to be understood as a field of social contestation, not just as a technical project. Every road that is built, and every terminal that is renovated, must be seen in the context of who benefits, who is affected, and who speaks in the process. The results of this study encourage us to rethink the direction of urban development: is it truly inclusive, or does it only serve a handful of classes that have a louder voice?

Thus, the conclusion of this study does not only stop at knowledge but also opens up space for change. If development is to truly touch social justice, it must start from the recognition of the space that the community lives in – not just the planned space. Infrastructure must be a means of unifying, not separating. He must live with his people, not stand on top of them.

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