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THE PEDESTRIAN IN WEST AFRICA'S TOWN, THE POOR PARENT OF MOBILITY IN THE SAHELIAN CITY OF OUAGADOUGOU IN BURKINA FASO

Abstract: This article addresses the issue of pedestrian mobility in the city of Ouagadougou in Burkina Faso. The main objective is to identify the place given to pedestrians in urban mobility in this city. Specifically, the study aims to identify the daily movements of pedestrians in Ouagadougou, to analyse the impact of the occupation of public space, particularly the edges of the road, on pedestrian mobility and to better understand the sharing of traffic spaces for safe pedestrian mobility in this city. The methodological approach was based on two types of data sources. These concern the exploitation of administrative and scientific documents and the carrying out of a survey based on a questionnaire and semi-directive qualitative interviews with a sample of 115 people as well as field observations accompanied by the taking of photographs. It emerges that moving by foot every day in Ouagadougou is a major constraint for the wealthy or, above all, the poorest city dwellers. The spaces dedicated to pedestrians are either non-existent or occupied by other city dwellers using motorised means of transport to circulate or park or by commercial activities. Such a situation undoubtedly creates conflicts of use of these spaces, under the helpless gaze of the pedestrian and the local authority. This leads to the conclusion that the pedestrian is the poor relation of urban mobility in Ouagadougou. All in all, the study proposes to rethink the sharing of urban traffic spaces upstream by taking pedestrian mobility into account in urban planning policies and instruments, and downstream, to carry out mobility projects that take the pedestrian into account.

Key words: urban mobility, modes and means of transport, conflicting uses of the road, pedestrian consideration

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Introduction

The issue of promoting sustainable urban mobility in African cities is a major challenge in addressing various social, economic and environmental issues. Indeed, mobility is at the heart of all urban functions. These concern travel, entertainment, health care, education, training, visiting, work, etc. In order to develop alternatives to the use of motorbikes in some cities to meet these needs, efforts are directed towards the use of public transport without giving importance to pedestrian mobility which, in reality, concerns all road users.

Indeed, in the creation of public space, particularly for urban mobility, the pedestrian seems to be the poor relation of all urban projects. However, all users at some point use their feet to complete a journey started either by motorbike, car or tram. As Amar (2010) points out, 'walking is the stem cell of urban mobility'. And according to Rennesson (2008), pedestrians are essential to urban life as well as to economic and social vitality, and walking is an efficient, economical, non-polluting and healthy mode of travel. Seen from this angle, urban planning should give it a prominent place, if not make walking routes or safe paths.

Furthermore, in the appropriation of public spaces, due to the absence or laxity of urban regulations, the edges of most roads, whether or not they are equipped and intended to serve as pavements or pedestrian routes, are occupied by shops, car parks, sheds, etc., thus obliging pedestrians to use the central medians or the edges of the road. In addition, the design of some roads often overlooks the need to provide space for pedestrians.

In the specific case of the cities of Burkina Faso, particularly the metropolis of Ouagadougou, the country's political and administrative capital, pedestrian mobility seems to be virtually ignored not only in planning instruments and urban operations but also in daily practices. The master plans for development and urban planning or the land use plans drawn up for this urban area do not explicitly address the issue of pedestrian mobility. Similarly, in operational terms, the city has few real pavements or safe intersections regulated by traffic signs. According to SSATP-Burkina Faso (2019), only about fifty intersections in the city centre are regulated by traffic lights. Some crossroads operate in a rudimentary manner and sometimes with settings that can be a source of accidents. Also, access to public transport stations is rarely pedestrian-friendly. Crossroads and pedestrian crossings (where they exist) are mostly taken over by motorists who occupy them as car parks, by informal sector activities or by advertising hoardings.

However, it has been observed that in Burkina Faso, walking does not seem to be a common practice for city dwellers. They prefer to travel by car, even for short distances. The argument most often put forward is that because of the country's geographical location, the daily and annual temperatures are very high (on average 30°C), which does not allow for travel on foot, especially over long distances. According to Boyer & Delaunay (2017), every day, the capital is covered by 920,000 trips by bicycle, 910,000 by motorised two-wheelers and 143,000 by car. The collective taxi makes 36,000 passenger trips and the bus about 15,000.

Such practices and perceptions expose pedestrians to traffic accidents and increase their "urban" stress once on the road. In 2015, it was found that pedestrians were involved in 12% of accidents, mainly on asphalt roads linking neighbourhoods, which clearly shows that in Ouagadougou, urban road layouts are not adapted to soft modes of travel (Adolehoume, 2002

cited by Nikiema et al. 2017). Also, according to Sethi and Mitis (2013) cited by Nikiema et al., (2017), pedestrian and cyclist mortality is often higher among populations with lower living standards. From 2005 to 2018, the number of accidents almost tripled to more than 13,000 recorded cases with 191 deaths in 2018 (SSATP-Burkina Faso, 2019).

In order to understand the contours of pedestrian mobility in the city of Ouagadougou, this study addresses the following main question: What is the place given to pedestrians in urban mobility in the city of Ouagadougou? Specifically, how do pedestrians move around in Ouagadougou on a daily basis? What are the impacts of the occupation of public space, particularly the edges of the road, on pedestrian mobility? How can we rethink the sharing of road traffic spaces in Ouagadougou taking into account pedestrians?

The overall objective of the study is to identify the place given to pedestrians in urban mobility in Ouagadougou. Specifically, the study aims to identify the daily movements of pedestrians in Ouagadougou, to analyse the impact of the occupation of public space, particularly the edges of the road, on pedestrian mobility and to better understand the sharing of traffic spaces for safe pedestrian mobility in this city. The analysis is structured around the following points, (i) Materials and analysis method, (ii) results, (iii) discussion.

Materials and methods

To carry out the study, a classical methodology was followed. Two types of data sources were used. These are administrative and scientific documents (administrative reports, dissertations, theses, articles, etc.) and a survey based on a questionnaire and semi-directive qualitative interviews as well as field observations with photographs. The collection of secondary and primary data lasted two months, from September to October, which corresponds to the beginning of the school and university year in Burkina Faso. The data collected with the KoboCollect application was processed in MS Excel for statistical and graphical purposes. ArcGIS software was used for the production of cartographic illustrations and for spatial analysis.

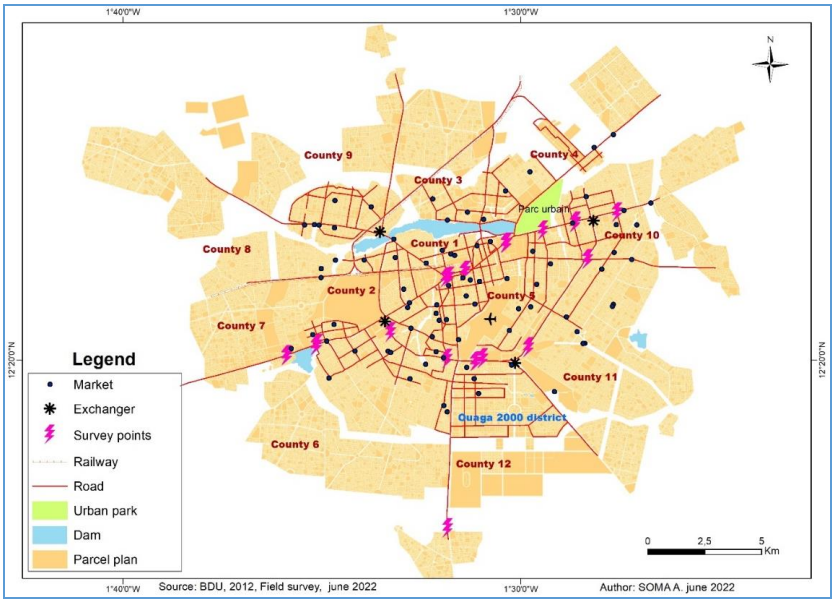

Fig. 1. Configuration of Ouagadougou space

The study focuses on the city of Ouagadougou, the capital of Burkina Faso. Located in the heart of Burkina Faso, Ouagadougou is also the country's most dynamic administrative, economic and cultural centre. It is subdivided into 12 arrondissements and 55 sectors (Commune de Ouagadougou, 2009) covering an area of 52,000 hectares (see Figure 1).

According to the results of the General Census of Population and Housing (RGPH, 2019) conducted by the National Institute of Statistics and Demography (INSD), the city has a population of 2,453,000. In 2022, the population is estimated to be 3,000,000.

The demographic sample consisted of 115 people chosen in a random but reasoned manner. Three categories of actors concerned with urban mobility in general were targeted. These were executives from the Ministry in charge of urban planning and mobility (10 people), executives from the technical services of the Ouagadougou municipality (05 people) and city dwellers (100 people). Interviews were conducted with actors in the first two categories. Surveys were conducted among city dwellers (pedestrians, motorists and cyclists).

As for the spatial sample (see Figure 2), it concerned 18 central points, i.e. the city's four interchanges, four level crossings and 11 ground crossings located in districts 1, 2, 3, 4, 5, 6 and 7 of the city. The choice of these districts is justified by the fact that they are denser in terms of mobility.

Results of the study

Daily travel in Ouagadougou

Ouagadougou alone is home to 45.4% of the urban population of Burkina Faso (INSD, 2019). The rapid growth of the population and the sprawl of the urban space are placing increasing constraints on the mobility of city dwellers. This has become one of the priority issues for urban development. Indeed, travel is multiplying and lengthening with the

transformation of peri-urban areas into dormitory towns, thus creating increasing congestion, concerns about the paving of roads and means of transport. The flow of people entering and leaving the city centre was estimated at 900 000 per day in 2012 (Transitec, 2012) and reached 1 000 000 in 2015 (Bariol-Mathais, 2020). These trips are made by various means. These are bicycles, private cars, buses, motorbikes, tricycles, feet, etc. (Figure 2).

Fig. 2. Movement of city dwellers in Ouagadougou (Soma et al., field observation, June 2022)

According to the results of the study, the modal distribution dealing with the means of travel used is diversifyied (see Figure 3). It is clear that motorbikes are the means of transport most used by city dwellers (52%). This has earned Ouagadougou the title of "capital of two wheels". Motorbikes are followed by personal vehicles used by 21% of the population, particularly the wealthiest. On the other hand, walking, tricycles and bicycles are used very little by city dwellers. Only 4% of the people surveyed travel daily on foot from their homes to the city centre for needs over an average distance of 15 km. Thus, Ouagadougou is one of the West African capitals where people walk the least, as mentioned by Diaz-Olvera, Plat & Pochet (2005).

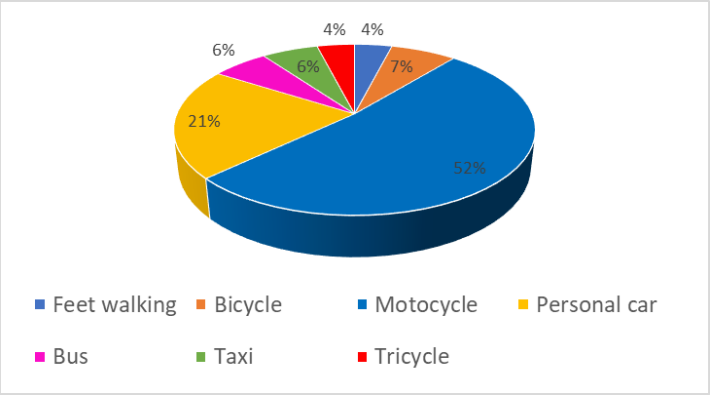

Fig. 3. Means of travel used by respondents (Soma et al., field observation, September 2022)

The territorial inscription of daily micro-trips oriented towards social or professional life, domestic tasks, school rhythms and so on, is thus marked by fairly diversified means of travel which shape or influence the living space of city dwellers and urban dynamics. Travel is thus motivated by the desire to satisfy a specific need: to visit someone, to go to

the market, to the hospital, to school, to the university, to have fun in a maquis, etc. However, the city of Ouagadougou is poorly equipped with asphalt roads. According to the Ministry of Infrastructure, only 22% of Ouagadougou's roads are paved with an average width of 12 metres. Furthermore, the need for pedestrian crossings or safe access to shops and facilities is rarely taken into account in the development of the road network. Road markings and horizontal and vertical signs are also poorly integrated. The city of Ouagadougou therefore has no real pavements, safe intersections regulated by traffic lights or road markings adapted to pedestrians. So, making the link between the means of travel used and the way in which the roads are laid out, it can be noted that the pedestrian is not sufficiently considered in urban mobility.

Conflicts of use and the paradox of city dwellers in relation to pedestrian crossings

Conflicts of use of pedestrian areas

Pedestrian crossings (when they exist) are taken over by motorcyclists, car drivers and tricycles, which use them to park (especially on Fridays at Muslim prayer time or on the occasion of weddings, baptisms, funerals, etc.). They are also used for activities other than travel. These concern passage of animals, preparation of millet cakes or doughnuts, sale of fruit, vegetables and various products. The photographic plate (Figure 4) illustrates the occupation of pedestrian crossings by women selling fruit and vegetables.

Fig. 4. Pedestrian crossings occupied by fruit and vegetable vendors (Soma et al., field observation, June 2022)

In addition, there are roads where the upstream design has not provided a place for pedestrians. Pedestrians, who, due to the lack of suitable facilities (cluttered or absent pavements, parking, etc.) or due to the occupation of spaces dedicated to them, walk directly on the road (as shown in the photograph above). Pedestrians are then forced to walk on the pavement and generally outside the spaces dedicated to them. The accumulation of obstacles such as spontaneous commercial activities, unreferenced works or rubble, does not allow pedestrians to have continuity in their movements. They are forced to use spaces that have not been designed for them and adapted to their needs. In addition, traffic lights and certain crossroads create frustration for pedestrians. Indeed, people in vehicles or on motorbikes often honk at pedestrians who want to cross the road when the light has just turned green. This frustration undoubtedly leads to a lack of consideration, aggressiveness, anxiety and stress for the pedestrian. Also, the lack of maintenance of some footpaths becomes an obstacle for pedestrians.

For example, holes resulting from sewage works that have not been filled in constitute stagnation points for rainwater that can spill onto pedestrians when a vehicle passes. "It's hard to be a pedestrian in Ouagadougou. When you are a pedestrian, you are obliged to walk on the lanes reserved for motorbikes and cars and to accept all sorts of insults and humiliation," exclaimed one of the citizens interviewed.

Moreover, pedestrian crossings, if they exist, are not very safe: they are not very visible, marked in an anarchic manner, without protective islands, dysfunctional at crossroads with traffic lights, lack of push buttons, forcing pedestrians to adapt to the traffic. However, according to articles 10 and 47 of decree n°2003-418/PRES/PM/MITH/SECU/MJ/DEF/ MATD of August 12th, 2003 on the definition and repression of road traffic offences, 'any person on foot who uses the road reserved for motorbikes and cars is punished by a fine of 1.5 dollars US. However, most of the roadsides that should be used as pavements for pedestrians are occupied by shops and other anarchic installations. The police are unable to bring order to these anarchic and illegal occupations. This leads to an increase in accidents, stress and traffic disorder. However, there is a paradox among city dwellers regarding their perception of pedestrian crossings and the uncivil practices observed.

Paradox of city dwellers in relation to pedestrian crossings

The existing pedestrian crossings are little used and little respected by city dwellers (pedestrians and other users). Indeed, field observations have shown that the road markings and vertical signs are hardly used by pedestrians. While level crossings are built on certain key points of the city's arteries, they are very rarely used by pedestrians (Figure 5).

Fig. 5. Pedestrian crossings built but not used (Soma et al., field observation, June 2022)

Paradoxically, these pedestrian crossings, set up by the municipal and state authorities, are used for other purposes: merchants' stalls, rest areas, urinals, rubbish dumps, drug consumption, children's entertainment areas, etc. The following photographic plate (Figure 6) supports these allegations.

Fig. 6. Pedestrian crossings transformed into rest areas, dumps and urinals by local residents (Soma et al., field observation, June 2022)

This paradox can be explained according to the perception of pedestrian crossings and uncivil practices observed by the people surveyed. The figure 7 provides a better understanding of this paradox.

Several constraints are placed on pedestrian crossings in the city of Ouagadougou. According to 100% of those surveyed, the pavements are not suitable for walking. These pavements lack any significant development, particularly green screens to reduce the heat (the average annual temperature is 35°C). These pavements are also mostly without bitumen, which exposes pedestrians to dust in the dry season and to mud in the rainy season. Also, 96% of the people surveyed consider that crossing pedestrian crossings on the ground is very constraining because of the often high-speed traffic of cars and motorbikes, which do not respect traffic signs and traffic lights. 92% of the people surveyed find that the climb up to the level crossings in order to cross a track is very tiring and takes more time than crossing on the ground.

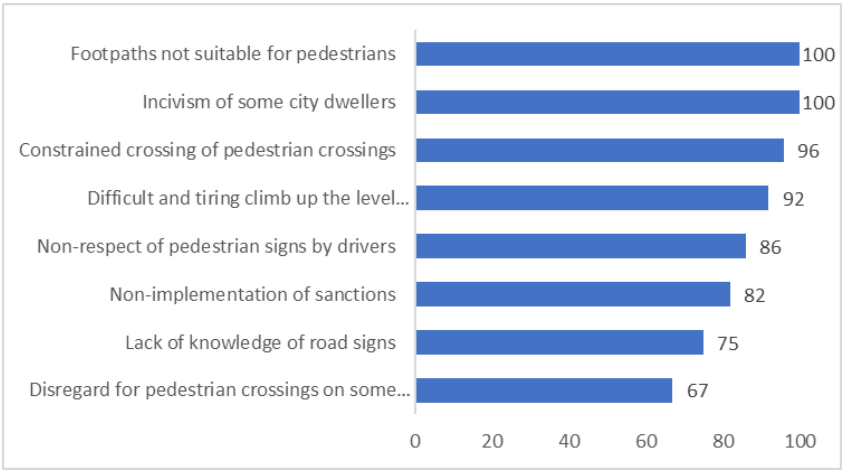

Fig. 7. Perception of pedestrian crossings and uncivil practices observed according to the people surveyed (Soma et al., field observation, September 2022)

As for the use of pedestrian crossings for other purposes, 100% of those approached linked this to the incivism of certain city dwellers. 82% of those surveyed thought that this was due to the non-application of the penalties provided for by the law, while 75% of those approached linked this to the lack of knowledge of road signs by city dwellers or the failure of people travelling by car or motorbike to comply with the highway code, i.e. 86% of the city dwellers surveyed. Finally, 67% of those approached maintain that pedestrian crossings are not sufficiently taken into account in the design of urban roads.

Rethinking the sharing of urban traffic spaces

Following the spatial configuration of the city of Ouagadougou, it can be seen that it is made up of more or less segregated and fragmented urban spaces, which are particularly noticeable in the layout of the road network. The city's designers tend to favour motorised modes of transport (two-wheelers, cars, etc.) to the detriment of walking. However, apart from the fact that these developments are not adapted and sustainable, we can also observe that they are out of step with the practices of the inhabitants, especially in the city's hypercentre, with regard to the activities that take place there (commerce, administrative services, leisure, hotels). Indeed, these activity areas are difficult to access by active or soft modes, i.e. walking.

Therefore, taking walking into consideration is a requirement that must be manifested upstream, i.e. from the development and effective implementation of urban planning and transport policies and projects. For example, the Master Plan for Urban Development and Planning, the Land Use Plan provided for by law n°017-2006/AN of May 18th 2006 on the Urban Development and Construction Code in Burkina Faso, and the policy on urban mobility and sustainable accessibility in the cities of Burkina Faso (SSATP) are all interesting instruments for addressing the issue of pedestrians within these problems and for reflecting on the proper integration and development of walking in the urban environment. Taking the pedestrian into account in urban mobility does not mean carrying out isolated pedestrian developments in response to specific problems, without any overall vision. Rather, taking into account the pedestrian as a full-fledged user requires a travel infrastructure adapted to his or her needs and to the overall urban dynamics of the city. It is therefore necessary to start with a participatory, inclusive and integrated diagnosis of existing needs and dysfunctions at the city level (central core and peripheries). The analysis can then lead to the development and operationalisation of an inclusive pedestrian plan in order to create a real urban mobility network integrating active and motorised modes of mobility.

In addition to spatial planning instruments, appropriate operational projects and enforcement actions must be undertaken for the benefit of the pedestrian in the city. These include:

- enforcing the law prohibiting the stopping and parking of vehicles and any other form of installation (trade) on pavements;
- carrying out an in-depth study on the materiality of the site, to evaluate the consideration given to pedestrian walking in the space reserved for each mode and means of urban transport in order to establish a connection throughout the public space;
- provide for a significant amount of space for pavements in the road layout;
- install anti-parking furniture on the pavements to guarantee the continuity of pedestrian paths;

- provide all roads with signage (traffic lights, road markings) and level crossings, especially at key points, to benefit pedestrians;
- make the city's public spaces pedestrian-friendly.
- reconciling shading, public lighting and various networks in order to reduce the heat (Ouagadougou being a city where it is extremely hot!) and to allow the pedestrian to see and be seen, by night as well as by day, in order to find his or her bearings and find his or her way, but also to anticipate potential risks (obstacles, interactions with other users, accidents).

Discussion

The results of the study need to be analysed in relation to the conclusions of other authors.

The study reveals that daily travel in Ouagadougou is still marked by fairly diversified modes and means of travel which shape or influence the living space of city dwellers and urban dynamics. By making the link between the means of travel used and the way in which the roads are laid out, we can see that the pedestrian is not sufficiently considered in urban mobility. The city does not have real pavements, safe intersections regulated by traffic lights or pedestrian-friendly road markings. This finding corroborates that of other stakeholders.

For example, Luuk & Imelda (2011) note that unfortunately, in Africa, the issue of the status of the pedestrian and the bicycle user is an additional component in the city. Walking and bicycles are often considered to be the "poor man's means of transport". Rennesson (2008), points out that walking is the second most important mode of travel in the city, as it is used on average for 20% to 30% of trips in the city centre. Guézéré (2013) notes that "the widespread use of motorised vehicles in Lomé, by influencing urban planning policies and the strategies of individual and economic actors, has led to an urban recomposition that is particularly unfavourable to walking".

In view of the needs imposed or not on foot at certain times and places, the study led to observations of conflicts of use of pedestrian traffic areas in Ouagadougou. Indeed, it emerged that pedestrian crossings (when they exist) are monopolised by motorcyclists, car drivers and tricycles, which use them to park or even to travel. They are also used for activities other than travel, notably for commerce. Pedestrians are then forced to move on the pavements and generally outside the spaces dedicated to them, which is a source of conflict between users of these spaces, frustration and lack of consideration of pedestrians in traffic. Pedestrians are therefore the poor cousins of urban mobility. SSATP-Burkina Faso (2019), speaks of a sharing of road space to the detriment of the majority use by pedestrians. This observation is made by Abrams et al. (1980) quoted by Fourchard (2006) who note that in Lagos, as the rest of the roadway is occupied by badly parked cars, cyclists, shops, itinerant traders, material depots and at night by beggars, pedestrians use the street for their movements, thus provoking insults and fights. Bachmann (2019) also points out that the lack of maintenance of certain pedestrian routes becomes an obstacle for pedestrians. The same observation is made by Adolehoume (2002) who notes that the accumulation of obstacles on the pavements in the city of Yaoundé such as spontaneous commercial activities, unreferenced works or rubble do not allow pedestrians to have continuity in their daily movements. They are forced to walk on the roadways and are thus exposed to all kinds of risks. In his analysis of such a situation in Strasbourg, Helluin (2017) considers that pedestrians are located 'in the blind spot of mobility' in the city.

Boyer & Daulenay (2017) mention that, like other urban functions, pedestrian mobility raises questions of spatial and social justice to be taken into account in urban planning. For Beaujolais et al. (nd), to facilitate pedestrian travel and reduce road accidents in urban areas, priority should be given to increasing the number of safe pedestrian routes and reducing vehicle speeds in urban and peri-urban areas. Rennesson (2008) notes that the needs of pedestrians determine the requirements for a pedestrian network in the city. The aim is to ensure accessibility for pedestrians everywhere in the city's neighbourhoods, which requires in particular the removal of all obstacles to movement and the continuity of pedestrian routes in time and space.

However, the study reveals a paradox among Ouagadougou's urban dwellers in terms of their perception of pedestrian crossings and the uncivil practices observed. Indeed, existing pedestrian crossings are little used and little respected by city dwellers (pedestrians themselves and other users). Field observations have shown that road markings and vertical signs are hardly used by pedestrians. Similarly, the level crossings built at certain key points of the city's arteries to facilitate crossing the tracks are very rarely used by pedestrians. Instead, they are used for other purposes such as merchandise stalls, rest areas, rubbish dumps and drug consumption areas. This finding is not mentioned in the analyses of the authors read. This kind of behaviour may be typical of the city of Ouagadougou.

In any case, the study considers that it is necessary to rethink the sharing of urban traffic spaces in Ouagadougou in view of the shortcomings observed in the participation of pedestrians in urban mobility. This reflection is in line with that of Sinon (2015) and Guigma (2017). Stucki (2016), agrees when he stresses that walking should be placed at the centre of the reflection on the improvement of mobility, and that the city should be an attractive space for pedestrians. Helluin (2020) also notes that "pedestrian travel should be more integrated into urban planning and design processes". The challenge of linking urban planning, urbanisation and pedestrian mobility is therefore obvious.

In definitive, Stucki (2016) believes that there is room for improvement in the configuration and maintenance of public space in African cities, in order to make the conditions for pedestrian travel safer and more dignified. In other words, the city needs to be made pedestrian-friendly to make it attractive. For Kaufmann & Faith (2011); Kaufmann (2014); Vanderstraeten & Corijn (2018), cited by Mezoued & Letesson (2019), 'the success of the structuring pedestrian network will depend closely on an overall organisation of travel tending towards a strong reduction in automobile pressure to which a polycentric and metropolitan structure can contribute'. The idea is to create walkability surfaces (Frank et al., 2010), where the pedestrian can use the whole of the public space as freely as possible, without barriers or boundaries, but at the same time allowing other modes of transport to circulate or share the space (Mezoued & Letesson, 2019).

Conclusion

Pedestrian mobility is a major challenge in African cities, particularly in Ouagadougou, a city where people walk less due to certain socio-cultural considerations and climatic realities. Pedestrian crossings are almost non-existent or are often built on an ad hoc basis without being adapted to movement. They are also used for other purposes, making it difficult to continue walking over short and long distances.

In sum, walking is, and will remain, the essential mode of travel for city dwellers. This requires reflection on the possibilities of organising urban space, giving maximum consideration to functional and social links through soft and active travel, in this case walking. There is a need to rethink the spatial syntax of the city and especially the place of the pedestrian in public space.

The strong growth of commuter flows towards the city centre, linked to the radioconcentric urban development model of the city of Ouagadougou, risks accentuating the difficulties of mobility with motorised modes of travel, while the construction of new road infrastructures does not take seriously this issue, which must not remain in a "blind spot" of urban mobility. The city must become an attractive and safe space for pedestrians.

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