

Finding Ways around the Campus

A Study to Support a New Signage System for a University Campus in Natal, Brazil

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Keywords

spatial configuration; architectural research; architectural design; university campus

Abstract

In order to improve wayfinding around the Universidade Federal do Rio Grande do Norte's main campus (Natal, Brazil), a new signage system for pedestrians is being proposed as part of its new configuration, to be implemented by 2010. The study focus on methodological procedures and techniques, developed within an interdisciplinary framework, which are being applied as resources for design decision-making; among them, behavioural mapping (to represent the students' views about the campus's current spatial configuration) and axial modelling of the existing and projected pedestrian routes, connecting buildings and linking these to open spaces, bus stops and car parks. By articulating the collected information, a basis to support the implementation of signage guidelines for the 2010 campus spatial configuration was developed. Key-words: pedestrian, campus, interdisciplinary approach.

1. Introduction – a signage system for a new spatial configuration

By the year 2010, as a consequence of a National Government Plan for expanding higher education, the Universidade Federal do Rio Grande do Norte (UFRN) main campus (Natal, Brazil) will site several new constructions and undergo various alterations in the ways that connect old and new buildings. The increase in number of users will worsen the already notorious difficulties in navigability within the main campus site, especially for newcomers. This situation motivated the present study which subsidised a TFG (Trabalho Final de Graduação), a material submitted as a final piece of academic work required for attaining the degree of architect, which will be briefly explained here.

The full study¹ articulates two cognitive perspectives: one more directly associated with subjective lines of enquiry, the other one concerning a more objective nature, in order to bridge knowledge pertinent to the "laws of society to space" and "the laws of space to society" (Hillier and Hanson 1984). In this study the laws of society to space are investigated, by enquiring about the places users want to reach and how they go about to get there; the laws of space to society are examined through the study of the campus spatial structure. By applying syntactic analysis procedures to the campus network of routes and open spaces, we sought to verify whether and how spatial properties of potential accessibility influenced orientation and movement patterns.

After articulating information drawn from analytical procedures that take into account an objective as well as a subjective perspective, signage guidelines were defined. We expect to contribute to the reduction of the current difficulties concerning wayfinding and respond to a new structure of accesses and barriers, specifically for the 2010 campus spatial configuration.

2. The Campus

Located in Natal, Brazil, the campus was planned during the 1970's by architect and urbanist Alcyr Meira, according to the Modern Movement urban design paradigms of road hierarchy and zoning; nevertheless, during the past 30 years, the opening the many informal pathways – herein referred to as tracks – were partly a consequence of the distance among buildings. Figure 1 shows the campus' current division into functional zones (inspired by the one given by its masterplan), in order to clarify the explanation of the study.

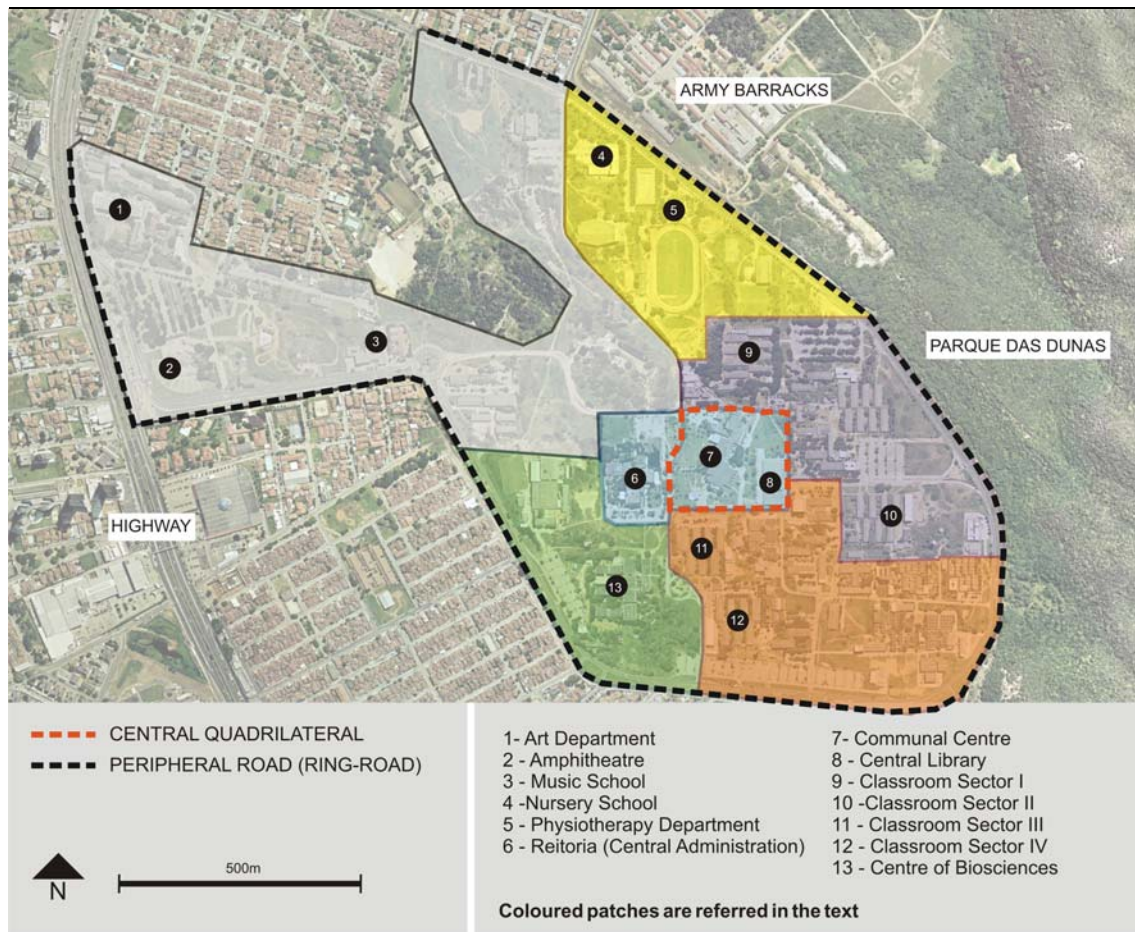


Figure 1

The UFRN Central Campus. Source: Instituto de Defesa do Meio Ambiente (IDEMA), 2006, modified for this study in 2009

The central Blue patch, in particular, concentrates three important collective buildings, which, as will be better explained later, provide a special character to the campus: the Reitoria (central administration), the Communal Centre, and the Central Library. In this area, it is important to emphasise, there is a set of paved streets, here named as the “Central Quadrilateral”, and which has a key role for the understanding of the results of the study.

3. Articulating statements and configuration

The students' survey was collected from a sample of 80 participants, attending various courses, who were interviewed all over the campus. The research was developed in two stages: in the first stage the researcher asked ten questions with the aim of identifying the journeys more likely to be used by that student on a daily basis as he or she moved around the campus; the answered routes were then recorded (by the researcher) in a map following a colour code defined according to a set of main destinations. Students were asked to state their most frequent journeys around campus and to identify the most pleasant and the most unsafe areas. The interviewed person could consider both the walking journeys and those in which the “Circular” service (a free bus that navigates round the Campus) was used; boarding and alighting points were mapped, but not the route taken by the Circular bus. The second stage of the interview consisted in a questionnaire with eleven questions, covering personal data (age, gender, date of University register etc) and questions concerning

particular difficulties in wayfinding (places hard to find, spots in which he or she might have got lost once, etc.). Interviews were developed within an average of 15 minutes. Before undertaking the present work, the researcher had participated in a study about the Social Image of the Campus², and had the opportunity to observe parallel aspects between this and previous studies conducted by Trigueiro³. As a result, the appropriateness to develop a comparative panorama articulating perceptive or behavioural aspects to syntactic observations came into discussion. An axial modelling (Figure 3) (Hillier and Hanson 1984) [4] was developed into distinct levels so that three axial maps were produced: (1) representing the situation as it was recorded in 2008, with all the ways considered (as described in the last “i” item), here called 2008-a; (2) representing the spatial configuration planned to be effective by 2010; and (3) the 2008 “formal” accessibility structure in which only the paved streets and parking lots are considered, here called 2008-b. This item of representation was necessary to enable a comparative analysis of the present and designed structure, since the blueprints for 2010 (which include a series of new buildings and alterations in the access structure) do not display information other than the representation of formal routes. The measures considered for all representations were: Connectivity, Local Integration (HH R-3), and Global Integration (HH R-n).

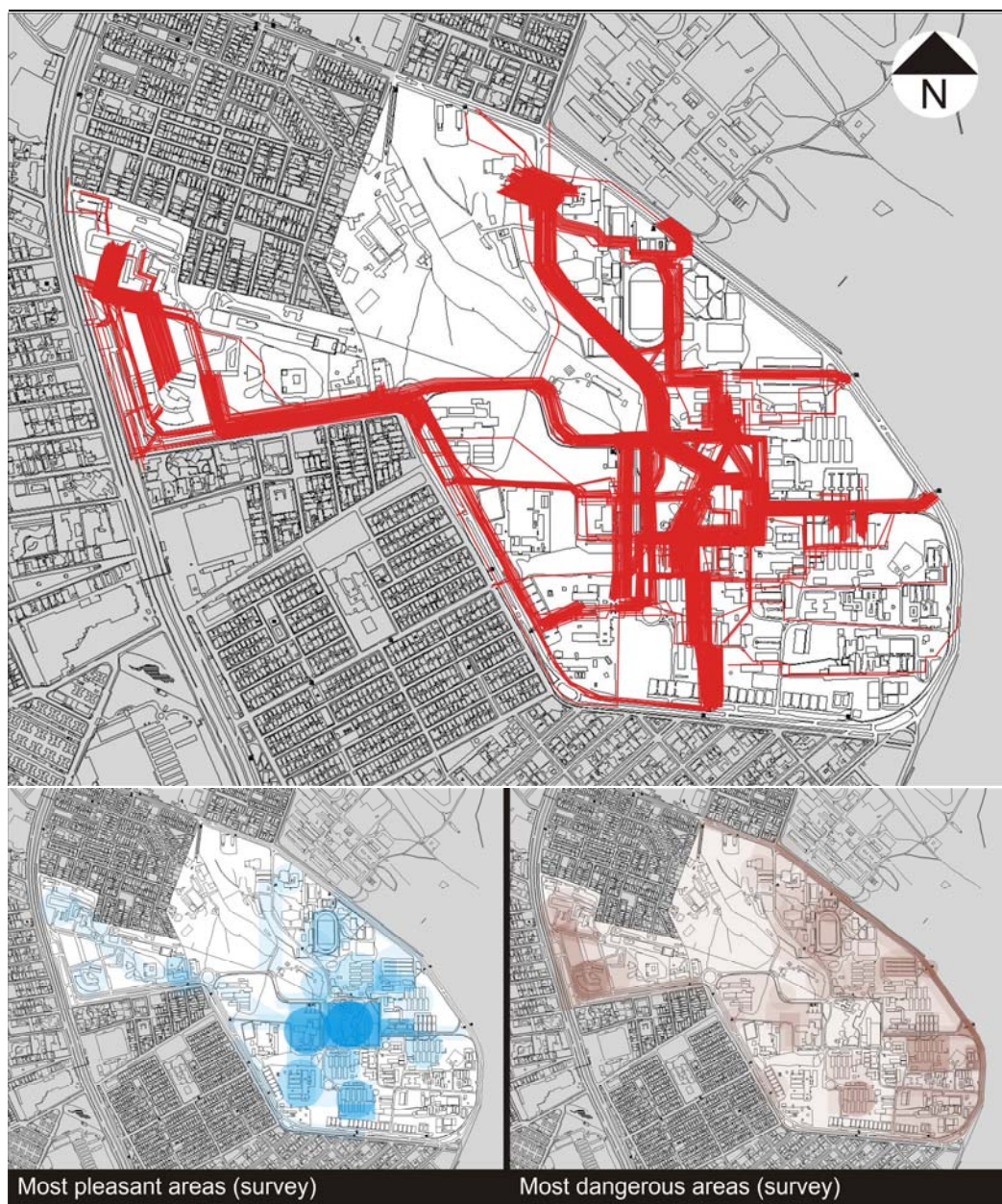


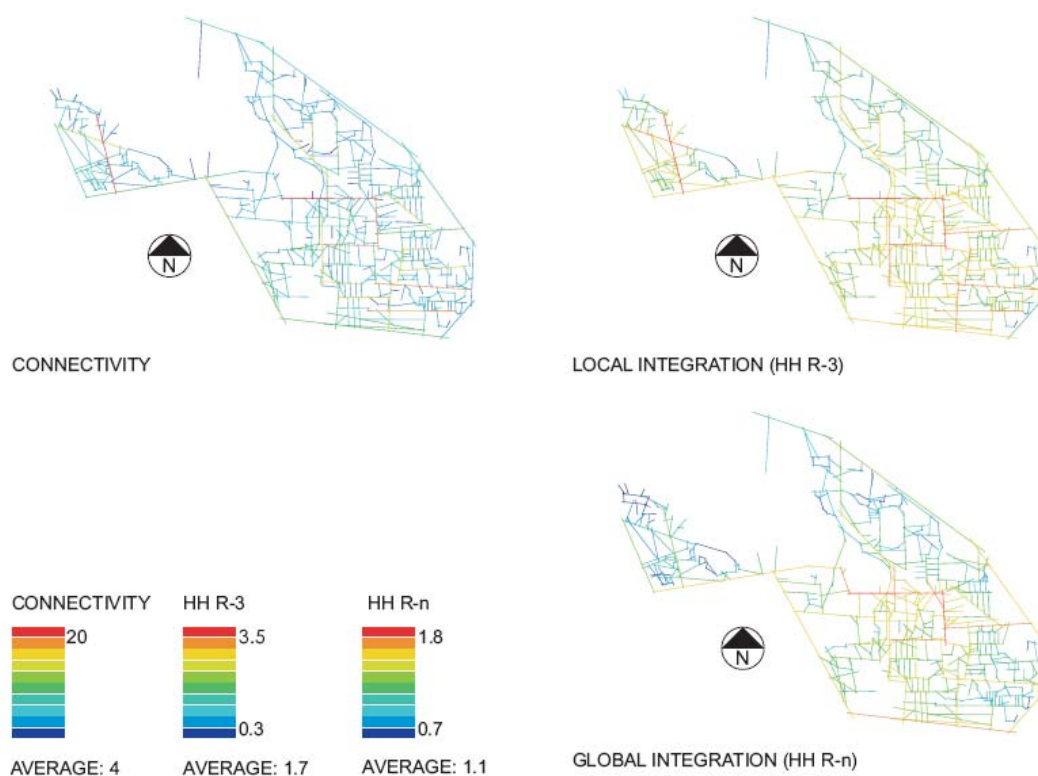
Figure 2

Graphic results from the interviews: Most used journeys map, displaying all registered journeys (red lines), areas perceived as most pleasant (blue patches), areas perceived as most dangerous (brown patches), according to the survey. The intensity of the colors is proportional to the number of mentions. Source: Onofre 2008, modified for this study in 2009

The students' survey showed that the area here named as "Central Quadrilateral" plays a key role as a place of convergence and distribution of paths (Figure 2). When asked, "In your opinion, what is the main reference point in the UFRN campus?", 71 or 89% of the enquired students pointed out at least one of the three buildings that constitute the area: "The Central Library", "The Communal Center" or "The Reitoria". The central area was also referred to as the nicest part of campus (Figure 2) and the branching points considered as most important were concentrated on the edges of the Central Quadrilateral. The Communal Center is, therefore, the main campus node (Lynch 2006) in a global context, whereas classroom sectors I, III e IV, are important ones in local terms.

The campus peripheral road (the ring-road, see Figure 1) was mostly associated to arrivals and exits and was generally avoided for usual journeys round the campus, except for one of its specific segment. In this case, the exception (evident on the most used journeys map, Figure 2) is the stretch bordering the areas of campus represented by green and grey patches (Figure 1). Not surprisingly, the part of the ring-road considered by students as one of the most dangerous areas in the campus is the one which has less or no representation as most used journeys.

As will become clear forthwith the account of most used journeys given by students showed to be coherent in various aspects with what emerged from the quantified linear representation (Figure 3). (i) The areas predominately more integrated, in almost every modelled situation (2008a/b, 2010) are the Central Quadrilateral, and the stretches of the peripheral road that borders the areas patched in grey, green and orange. It is interesting to clarify that these are the segments adjacent to the most "urban" surroundings, in a sense that it includes a diversity of uses – housing, shops etc. Other segments of the ring-road flank the Parque das Dunas (an ecologic preservation area) and the military area that include barracks and an exercise field; (ii) The areas predominantly more segregated, which resulted



2008 (a)

Figure 3(a)(b)(c)

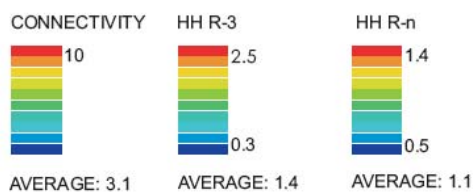
Quantified linear representation of the site as surveyed and projected: (2008a, above) all ways considered; (2008b, next page) paved streets and parking lots considered; (2010c, next page) paved streets and parking lots as planned. Source: Onofre 2008 (processed with Dephtmap, UCL).



CONNECTIVITY

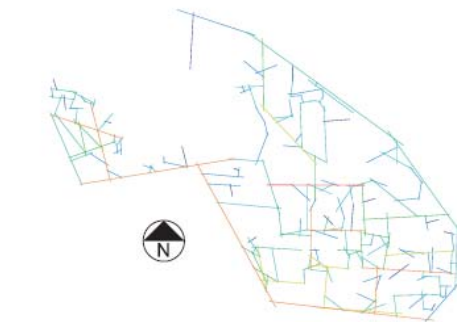


LOCAL INTEGRATION (HH R-3)

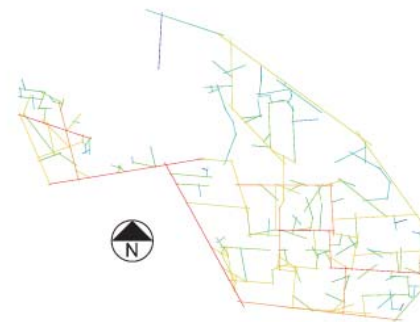


GLOBAL INTEGRATION (HH R-n)

2008 (b)



CONNECTIVITY



LOCAL INTEGRATION (HH R-3)



GLOBAL INTEGRATION (HH R-n)

2010

from almost every modelling procedure, are the north (yellow) and the north-eastern (purple) sections, as well as the surroundings of the Art Department (number 1, Figure 1); (iii) The main tendency observed was the development of integrated routes that tend to spread from the centre to the edges, mainly westward, but also, southward. This is partly a consequence of the high

integration values of the ring-road. The north and east areas are not as integrated as the other ones, in the global context; (iv) The informal tracks and paved pathways have remarkable importance in maximizing integration in the campus's central area (where most buildings of collective interest to students and visitors are located).

By comparing results from the users' survey to those from the axial analysis that represents informal tracks, paved pathways, parking lots and paved streets, as they were in 2008, it is possible to verify a tendency of coincidence between the most integrated axes and the most used routes mentioned by the interviewees. The Central Quadrilateral, for example, one of the most integrated areas, is also completely covered with lines that represent the students' most frequent itineraries. The Axis of the Amphitheatre, very integrated locally, is also the circuit most commonly chosen by the interviewees to reach the surroundings of the area. The coincidence stands at global integration level. It is also interesting to highlight that the most integrated axes in the northern area were generally included in the students' representation of their most frequent paths. However, it is important to notice, that, although the integration value of the southern end of the ring-road was in the most integrated side of the scale, it has a weaker presence in the students' representation of routinely used paths.

The coincidence between mostly integrated axes and most mentioned pathways is even closer when only parking lots and paved streets are considered (2008-b). Of the nine axes with the highest integration values (HH R-3 parameter), only one does not correspond to the representation of most common paths. And of the five most integrated axes (HH R-n parameter), only one does not match the representation of recurrently used paths. It can, therefore, be said that pedestrians tend to visualize their routes not only with a local focus, but also in a global context.

4. Finding ways towards signaling the campus

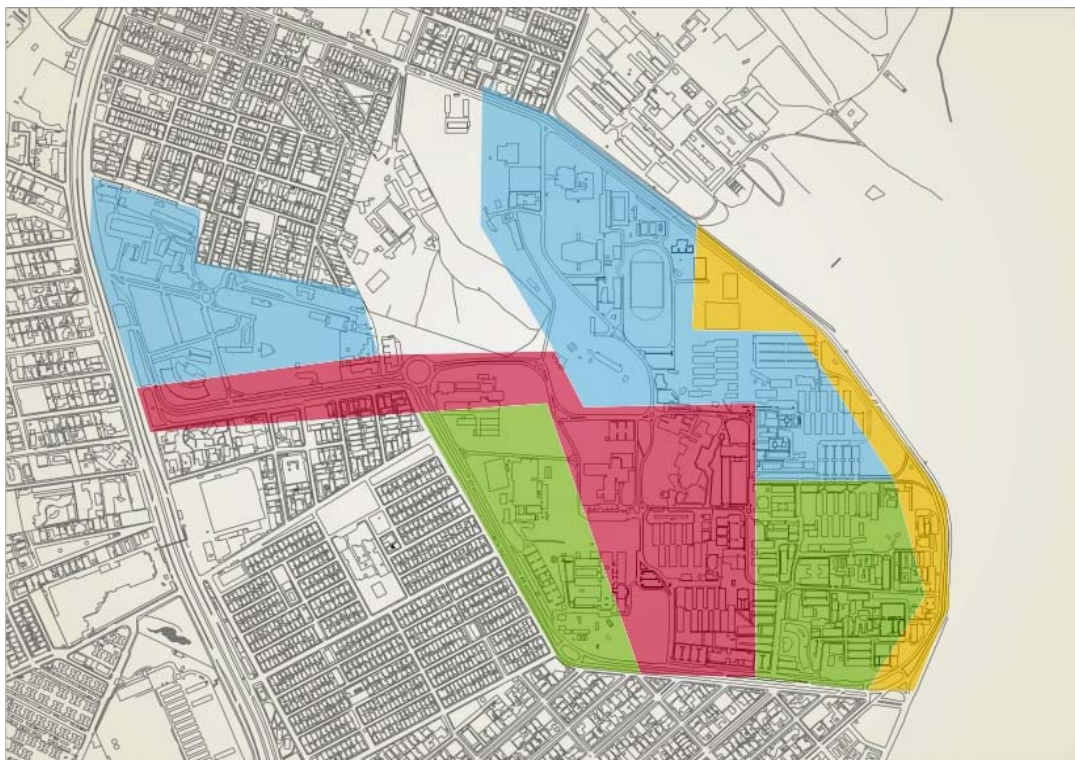


Figure 4
Zones defined for signage guidelines. Source: Onofre, 2008.

Figure 4 displays colour-coded patches over a representation of the 2010 plan for the campus, as an initial basis for the definition of signage guidelines, considering the above discussed results. The red zone was found to be, simultaneously, the most integrated and trod area, according to the

interviewees. So, it was considered ideal to receive the signage of greatest reach, the one which informs about the campus as a whole structure, thus functioning as a “distribution” circuit. The blue-coloured area was recurrently mentioned by the surveyed students although it has not presented high integration values. Findings therefore suggest that this area should be thought of as a target for a reinforced signage, which should be articulated especially well with the red area, a potential distributor. The green zones, detected as the ones with fewer references and descriptions of journeys, but with relatively expressive integration values, were considered as transition areas, which should carry signs with messages that worked to intermedate the other areas. The yellow zone, with low integration values, besides being pointed out as one of the most dangerous areas by the students, was the object of few or no mentions in the surveys. It was therefore defined as an area that should not receive pedestrian flows, unless changes in accessibility and new safety measures to improve current conditions are provided. The present experience indicates that the attempt to combine subjective views and syntactic analysis was worthwhile as complementary approaches since they can help to confirm or fulfil gaps in one another. Because problems concerning navigation contemplate both psychological and morphological aspects as they refer to relations between people and environment in an inextricable way, such issues could only benefit by a multifaceted and interdisciplinary approach.

Notes

- 1 Developed and supervised by the authors in collaboration with Professor Gleice Azambuja Elali
- 2 Coursework supervised by Gleice Elali (UFRN), following procedures based on Kevin Lynch's work (Lynch, Kevin. *A Imagem da Cidade*. 2006. Sao Paulo: Martins Fontes. Original version from 1960).
- 3 The UFRN campus was used several times as an object of space syntax analysis in coursework studies conducted by Edja Trigueiro (UFRN).
- 4 For which Depthmap was used. Copyright UCL, by Alastair Turner.

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