Timescapes

Timescapes. Non-geographical approaches to landscape.

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Abstract

Research dating from the decades of 1970's and 1980's in the fields of cognitive science and environmental geography placed *cognitive mapping* as an integrated approach of measuring *space* by using *time*, pointing out that human's perception of *reality* might be severely disconnected from the its physical support (Downs & Stea, 1977).

Technology, speed, movement and *distance* are interdependent concepts that have been promoting changes in landscape perception both in space as in time, to the point when "space becomes temporal" (Virilio, 2000). Instead of setting the tone for human life, landscape has become "a random network of pure trajectories" suggesting "a possible topography" (Tschumi in (Virilio, 2000)). The concept of the disconnection between cognitive mapping and physical reality is not new, but these concepts are increasing that disconnection. Landscape may be a reflection of it.

The methodology presented derives from two main theoretical conclusions: (a) that the disconnection between cognitive maps and physical reality increases with speed; (b) that people measure space by using time intuitively. Two hypotheses are then tested by conducting questionnaires involving small focus groups: (1) measuring space is more accurate with temporal distances than with spatial distances; (2) increasing speed applied to movement promotes stronger distortion in landscape perception.

Hypothesis (1) was partially demonstrated: the disconnection between cognitive maps and physical reality may increase with speed but it was also suggested that, sometimes, time might not be affected by speed. Hypothesis (2) was demonstrated with more certainty: time is a more intuitive tool to measure space than space itself, also being more accurate, homogenous and stable.

Conclusions in this paper also show the need to develop serious correlated research within the context of multi-task teams in the fields of cognitive sciences, environmental geography, architecture and landscape architecture. This research should be oriented towards ways of using time to raise awareness for the discrepancy between physical and perceived geographical relations. It could also focus on landscape perception and how it is affected by movement and speed.

Expected outcomes arising from this suggested research should present possible tools (analytical, technical, design) to understand the contemporary complexity of the landscape by using non-geographical approaches.

Keywords: cognitive mapping, landscape, movement, non-geographical mapping, space, speed, time

Full paper

1. LITERATURE REVIEW

1.1. TIME AND LANDSCAPE

Man has a practical notion of *time* as the duration of things in life. Time connected to the idea of linking different events and of dividing life into parts: something that has happened before (*past*), something that will happen after (*future*) and, consequently, something that is happening now (*present*).

Man has always found in *time* a useful tool to apply to His daily life: life/death, day/night, months, seasons, etc. Understanding time as the duration of events means to associate *time* with *change* ((Nunes, 2010) (Pallasmaa, 2009)).

Time was absolute for Aristotle as it was for Newton: a line connecting past, present and future, a mathematical concept independent from the observer. This idea was connected to the concept of *irreversibility.* But in the 20th century the idea of time as *absolute* gave place to time as *relative*; time interdependent of space; time as a contamination of past and future into the present. Einstein, after Agostinho, Heidegger or Borges, also concluded that the notion of *present* only exists if there is an idea of *past* and an idea of *future* (Prigogine, 1983).

Time is a human construction that places Man in space. According to Tschumi**,** "*time* is what allows us to measure *space*", that is, "*time* is spatial because *space* is what we construct, and time is there to activate these spaces". And, since it is a human product, it can be manipulated – collapsed, accelerated, reversed, put into simultaneity (Tschumi in (Virilio, 2000)). And when admitting a spatial quality in the notion of *landscape*, one can easily apply the same reasoning: time is what activates landscape (Fig. 1).

1.2. TIMESCAPES: THE NON-GEOGRAPHICAL DISTORTION OF THE LANDSCAPE

Research dating from the decades of 1970's and 1980's in the fields of cognitive science and environmental geography placed *cognitive mapping* as an integrated approach essential for the survival of all beings that move. The relation between space and time is what allows the generation of reasonable expectations, "so that we can make appropriate decision about spatial behavior" (Downs & Stea, 1977).

The way one moves in the landscape is, somehow, how one engages with it. Ingold talks about qualities of *movement* that are profoundly social, being "both perceptive of the world and generative and transformative of it." (Vannini, 2012). When walking, one is allowed to see a small portion of the landscape but with great detail; when driving one sees larger portions of it but with less detail; and when flying one sees very large extents of it but with very small detail. That is, eventually, a possible interpretation of Ingold's concepts of *moving along* and *moving across* the landscape (Ingold & Vergunst, 2008).

This relation between *time* and *space*, which can be called *speed*, has become an inevitable, and even essential condition to address contemporary complex transitional territories. Speed is a precondition of today's way of living and a product of technology; "a virtue in many societies". And even if sometimes *speed* is relative, as it is mistaken with *mobility*, the fact is that Man moves faster and further than every other period in history. And progressive faster sorts of movement have brought inevitable consequences to the way one perceives the landscape (Hamilton & Hoyle, 1999).

Due to the existential need of inhabiting the physical world, Man has learnt to perceive and control how *time* affects *life* (Nunes, 2010). But the more power He gained over the manipulation of *time*, the less dependent He became on *space,* what originated severe distortions on landscape perception. Research on cognitive mapping was a wakeup call that human's perception of *reality* might be severely disconnected from the physical support that sustains it.

Technology has increased *speed*; *speed* has changed human patterns of *movement*; *movement* has allowed greater *distances*; and greater *distances* have changed the way we perceive the *landscape*. As in all other human constructions, also has become affected *time* by the advances in technology, to the point where "space becomes temporal" (Virilio, 2000).

When accepting Virilio's idea, the relation between *time* and *landscape* acquires significant contemporary meaning: in its true dynamic nature, landscape is an ever-changing set of relations over a territory; therefore spatial connectivity becomes as important as temporal connectivity. Landscape is a construction of not only a spatial network between all different contemporary territories, but also a temporal network that assures the relations between all different times that, in some way or another, have been responsible to forge the landscape itself. "Landscape is more a piece of time than a piece of space" (Nunes, 2010).

The role of *communication networks* spreading across long-distance interdependent units and processes between urban systems is minimizing the relevance of the territory itself (Castells, 2000). Instead of setting the tone for human life, landscape has become "a random network of pure trajectories whose occasional collisions suggest a possible topography" (Tschumi in (Virilio, 2000)).

The conceptual idea of disconnection between cognitive maps and physical reality is not new (Agostinho; Borges; Einstein), but the progressive human detachment from biorhythms is increasing it. On a

landscape level, powerful infrastructures allow Man to *move along* and *across* the territory through abstract channels: highways, subway networks, flight connections or GPS-based navigation systems. The more abstract the infrastructure, the bigger the manipulation of *time*.

2. METHODOLOGY

This paper is part of a wider research, which seeks to understand the relation between time and landscape and the role of non-geographic approaches.

The methodology used here seeks to demonstrate some of the main conclusions coming from literature review: (a) that the disconnection between cognitive maps and physical reality increases with speed; (b) that people measure space by using time intuitively.

Three precedent studies are briefly presented, as examples of non-geographic approaches to reading the landscape, followed by two case studies focusing on two different hypotheses: (1) measuring space is more accurate with temporal distances than with spatial distances; (2) increasing speed applied to movement promotes stronger distortion in landscape perception.

These two hypotheses were tested by conducting two different questionnaires involving small focus groups. Results are discussed in the final chapter.

2.1. THREE PRECEDENT STUDIES

Example A is called “Non-geographic mapping” (Harris, 2004), which is a proposed new system of cartography that no longer refers to geographical distances but rather to time distances. The idea behind this example is that flight routes are so abstract that people lose the real territorial distances in favor of the time taken to go from point A to point B (Fig. 2).

Example B is called “Time Travel” and uses London’s subway network (Karlin, 2005). Following the idea that all subway maps, as effective communication tools, are abstractions of cities’ geographical conditions, Karlin explained how London’s map would look like if he replaced the conventional approach by another one that would consider the way people actually perceive time distances between stations (Fig. 3). Later, another student took on step further by creating software where people could interact with the map and acknowledge the level of distortion of the city (the furthest from the city center, the bigger the distortion) (Carden, 2006) (Fig. 4).

Example C is called “Geotagger’s world atlas” (Fischer, 2010). Fischer developed software able to register the time between all tags in pictures taken by users’ cell phones or registered online (Flickr, Picasa, etc.), as they move through the city. The result were city maps tracing geo-tagged photos, therefore creating a new map layer upon the geographical ones showing how users perceive and move in the city (Fig. 5).

2.2. CASE STUDIES

2.2.1. JOURNEY FROM HOME TO SCHOOL/WORK

In this case study two sets of questions were made, concerning the testing of the two hypotheses above mentioned:

1. First set: a) Time taken from home to workplace; b) Distance between home and work place.
2. Second set: a) Sketch the journey from home to workplace on a provided sheet, using any desired references points; b) Repeat the task on a new provided sheet.

The first set intended to prove that each interviewee could provide more accurate time distances than space distances when referring to a daily journey highly controlled in terms of time and space. Results were analysed with the use of statistics. Both perceived space and time distances were analysed in relation to real distances (Fig. 6).

The second set intended to demonstrate the level of disconnection between cognitive mapping and physical reality. On question 2.a., a blank A4 sheet was provided; on question 2.b., an A4 sheet with a general map of Lisbon’s area was provided. Results were analysed with the use of info graphics that

relate the abstractions of the drawings provided on questions 2.a. and 2.b. with the real trajectory obtained from Google maps. Examples can be seen on figure 7 (Fig. 7). Information about used reference points was also registered.

2.2.2. TRAJECTORY ALONG MAIN ROAD IN SMALL TOWN

In this case study two sets of questions were also made:

3. First set: a) Time taken from point A to point B; b) Distance between point A and point B.
4. Second set: a) Sketch on the provided sheet the most important perceptions from the surroundings, using any desired reference points.

These two set of questions were asked for two different types of movement: driving and walking. Interviewees were driven along the main road in the first case and were asked to walk as they would in normal circumstances in the second one. Questionnaires were only answered after each of the processes was complete.

The first set intended to prove that each interviewee could provide more accurate time distances than space distances and that both distances would be more accurate when walking (slower movement) than when driving (faster). All interviewees were familiar with the road as a holiday destination. Both perceived space and time distances were analysed in relation to real space and time. Results are presented in spider-web graphs relating perception and reality (Fig. 8).

The second set was intended to demonstrate that disconnection between cognitive mapping and physical reality increased with speed. On question 4.a. blank A4 sheets were provided. Results were analysed with the use of info graphics that relate the abstractions of the drawings provided on question 4.a. for both types of movement with the real trajectory obtained from Google maps. Examples can be seen on figure 9 (Fig. 9). Information about the awareness of existing buildings and secondary roads was registered and analysed, both in diagrams and statistically (Figs. 9 & 10).

3. DISCUSSION AND PARTIAL CONCLUSIONS

The pertinence of the theoretical part of this paper arises from the conscience that human capacity to move in *space* and *time* is limited; human power to abstract from and overcome the landscape's physical reality is limited. Recent research points out that even sophisticated patterns of movement need realistic relations to the physical reality (Cornelis, Cornelis, & Van Gool, 2006).

Although recognizing that the small size of focus groups may partially undermine some of the results, the sole purpose of this paper is to demonstrate the two above mentioned hypotheses, proposed following the presentation of the theoretical content, through the use of info graphics and statistical analysis.

In the first part of the first case study (2.2.1) it was not only proved that time distances were less distorted (only 11% of average distortion than space distances (30% of average distortion), but also that more homogeneity is shown in results concerning time, indicating that time can eventually be a stronger intuitive tool for measuring space.

In the second part of it, three main conclusions were drawn: a) more detail is given on the first drawing (on a blank sheet) than when provided a map; b) the general notion of the trajectory is more accurate when provided the map; c) the proportion of the trajectory increases significantly in parts where it becomes more complex (secondary or tertiary roads, when speed decreases). These conclusions may indicate that cognitive mapping shows more accuracy when the drawing has to be provided without any geographical hints. It also suggests that cognitive maps are based upon the geographic reality of the trajectories but are highly influenced by the type of movement and speed: increasing speed forces weaker perceptions of the trajectory itself and any reference points along it.

In the first part of the second case study (2.2.2) it was demonstrated that space distortion is bigger while driving (74%) than when walking (40%), while time distortion remained the same for both types of movement (69%), suggesting that control of time is not affected by speed. This appears to contradict, in part, the first hypothesis under test but further research is required. The awareness of existing buildings and secondary roads was also weaker when driving (14% and 25%) than when walking (25% and 50% respectively).

In the second part of it, two main conclusions were drawn: a) smaller levels of distortion in landscape perception are detected when walking than when driving (general layout of the road, identification of existing buildings and secondary roads in the right place); b) the bending angles of the road's general layout seem not to be affected by speed. This last conclusion suggests that some of the main features of the trajectory are equally perceived by the two sorts of movement but further research is required.

The first hypothesis was demonstrated only to a certain extent: the disconnection between cognitive maps and physical reality may increase with speed but it was also suggested that, sometimes, time may not be affected by speed.

The second hypothesis was demonstrated with a higher degree of certainty: time is a more intuitive tool to measure space than space itself, showing not only to be more accurate but also more homogenous and stable.

Conclusions in this paper also show the need to develop serious correlated research within the context of multi-task teams in the fields of cognitive sciences, environmental geography, architecture and landscape architecture. This research should be oriented towards ways of using time to raise awareness for the discrepancy between physical and perceived geographical relations. It could also focus on landscape perception and how it is affected by movement and speed.

Expected outcomes arising from this suggested research should present possible tools (analytical, technical, design) to understand the contemporary complexity of the landscape by using non-geographical approaches.

References

Vannini, P. (2012). *Ingold Trilogy Review.* Retrieved March 25, 2013, from Academia.edu: http://www.academia.edu/1526049/Being_Alive_Essays_on_Movement_Knowledge_and_Description_by_Tim_Ingold_book_review_

Virilio, P. (2000). *A landscape of events.* (J. Rose, Trans.) Boston: MIT.

Carden, T. (2006). *Travel Time Tube Map*. Retrieved October 24, 2012, from Tom Carden: http://www.tom-carden.co.uk/p5/tube_map_travel_times/applet/

Cornelis, N., Cornelis, K., & Van Gool, L. (2006). Fast Compact City Modeling for Navigation Pre-Visualization. *IEEE Computer Society Conference on Computer Vision and Pattern Recognition.* Computer Society Conference.

Downs, R. M., & Stea, D. (1977). *Maps in Minds. Reflections on cognitive mapping.* New York: Harper & Row Publishers.

Fischer, E. (2010). *The Geotaggers' World Atlas*. Retrieved November 02, 2012, from The Geotaggers' World Atlas: http://www.flickr.com/photos/walkingsf/sets/72157623971287575/

Ingold, T., & Vergunst, J. L. (2008). *Ways of Walking: Ethnography and Practice on Foot.* Hampshire: Ashgate Publishing Limited.

Hamilton, K., & Hoyle, S. (1999). Moving Cities: transport connections. In J. Allen, M. Doreen, & M. Pryke, *Unsettling Cities* (Vol. 2º, p. 354). London: The Open University.

Harris, J. J. (2004). *Non-geographic mapping*. Retrieved October 12, 2012, from Number 27: http://www.number27.org/assets/work/extras/maps/traveltime/

Karlin, O. (2005). *Time travel*. Retrieved October 23, 2012, from Oskar Karlin: http://www.oskarlin.com/2005/11/29/time-travel/

Nunes, J. (2010). Time and Landscape. *Time and Landscape.* Milan.

Pallasmaa, J. (2009). Space, place, memory, and imagination : the temporal dimension of existential space. In M. Treib, *Spatial Recall: Memory in Architecture and Landscape* (p. 272). London: Routledge.

Prigogine, I. (1983, December). *The Rediscovery of Time.* Retrieved March 28, 2012, from Mountain Man: http://www.mountainman.com.au/ilyatime.htm

List of attachments

Figure 1: The system of Roman roads activated the landscape. Towns along the main roads distanced between them a day travelling by horse (Image from the author, 2007).
Figure 2: Non-geographic mapping (Harris, 2004). Image shows examples of the disconnection between time and space when travelling by plane.
Figure 3: Time Travel (Karlin, 2005). Image shows the evolution process recorded by the author.
Figure 4: Time Travel Tube Map (Carden, 2006). Image shows examples of the disconnection between cognitive mapping and physical reality in London tube stations.
Figure 5: Geotagger's world atlas (Fischer, 2010). Image shows different city maps tracing geo-tagged photos.
Figure 6: Disconnection between perceived and real space and time distances (questionnaire 1)
Figure 7: Disconnection between cognitive mapping and physical reality (questionnaire 1)
Figure 8: Perceived space and time distances in relatino to reality (questionnaire 2)
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Short vita

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Background

After graduating in Landscape Architecture in 2007, co-founded Terramorfose Landscape Architects, an award winning small practice studio based in Lisbon, Portugal.

Since 2008, often participates as Landscape Architecture consultant, taking part in strategic decisions in important urban planning projects in Portugal, Brazil and Angola, as landscape architecture specialist.

In 2010 joins PROAP Landscape Architecture's team, in Lisbon, Portugal, where coordinated the research processes and co-coordinated the department of international communication, being responsible for some publications, design projects and all the information published in specialty publications.

In 2011 is invited as a teaching fellow in the PhD programme 'Contemporary Architecture of Metropolitan

Territories' - Landscape Unit, University Institute of Lisbon, ISCTE-IUL, where he currently lectures.

In 2012 joins the University of Edinburgh as an Early Career Fellow in Landscape Architecture, where he currently lectures and researches.

Research interests and recent activity

- Timescapes (time cycles and landscape perception; time-led landscape processes; non-geographical approaches to landscape)
- Videoscapes (the influence of video and other digital media in the contemporary perception of the landscape; video as a design tool in architecture and landscape)
- (In)visible edges (the edge in landscape history; the contemporary notion of edge in landscape)
- Landscape – support, productivity, commitment (the value of the landscape; landscape assessment in mid to large urban plans in emerging metropolitan areas)

In 2013 was awarded funding to host a one-day symposium on the topic: Videoscapes - The influence of video in the contemporary perceptions of the landscape. The author is now leading a team of researchers, lecturers and students from the University of Edinburgh on a European-level research on on using video as a design tool in architecture and landscape architecture.

In 2013 was also awarded an honorable mention in an international design competition entitled “Cityvision Rio de Janeiro 2013”, where he explores a speculative notion of edge in landscape.

Teaching interests

University of Edinburgh, ESALA:
- Landscape Reclamation (Design course for Undergraduates and Postgraduates)
- Urban Design and Housing (Design course for Undergraduates and Postgraduates)
- Supervision of Postgraduates dissertations for the MSc in Landscape Architect
- Supervision of Postgraduates final projects for the MSc in Landscape Architect

University Institute of Lisbon, ISCTE-IUL:
- Centre and Periphery; Time and Landscape; (In)visible Borders (Theoretical Modules included in the PhD programme ‘Contemporary Architecture of Metropolitan Territories’ – Landscape Architecture Unit)

Relevant publications

Books:
- *Lost Competitions* (PROAP Editions, 2011) (General Editor) (ISBN 978-989-20-2767-8)
- *Les Champs Habités* (2011) (Editor for Book section)
- *PROAP Landascape Architecture* (PROAP Editions, 2010) (General Reviser) (ISBN 978-989-97072.-0-7)

Papers:
- *Lighting on Demand. Sustainable lighting systems in public space* (co-author) (the paper was submitted to EFLA’s Scientific Board and was approved for the 2011 EFLA’s Annual Congress, Tallinn, Estonia)
- *Desert as a reversible transition* (co-author) (the paper was submitted to EFLA’s Scientific Board and was approved for the 2011 EFLA’s Annual Congress, Tallinn, Estonia)
- *Modular landscapes in arid climates. Redefining sustainability in public space* (co-author) (the paper was submitted to EFLA’s Scientific Board and was approved for the 2011 EFLA’s Annual Congress, Tallinn, Estonia)
- *Strategies for water management. A global irrigation model* (co-author) (the paper was submitted to EFLA’s Scientific Board and was approved for the 2011 EFLA’s Annual Congress, Tallinn, Estonia)
- *Misting-cooling systems for microclimatic control in public space* (co-author) (the paper was submitted to EFLA’s Scientific Board and was approved for the 2011 EFLA’s Annual Congress, Tallinn, Estonia)
- *Upgrading Downtown Cairo towards friendly mobility* (co-author) (the paper was submitted to URBENVIRON’s Scientific Board and was approved for the 2011 URBENVIRON’s Annual Congress, Cairo, Egypt)

Articles:

- *Time and Landscape* (theoretical support of the conference 'Time and Landscape' in Italy, led by Landscape Architect João Nunes)
- Landscape and Beauty (theoretical support of the conference 'Landscape and Beauty' in Italy, led by Landscape Architect João Nunes)
- *Landscape Observatory* (published in the Portuguese Association of Landscape Architect's journal Nº06 'European Landscape Convention', November 2010 to May 2011)
- *Small resilient landscapes - urban agriculture plots* (article to be published in the scientific journal of the ISCTE-IUL PhD programme 'Contemporary Architecture of Metropolitan Territories')