

Thermal notation as a design tool evaluating the thermal comfort of pedestrians moving in spatial sequences

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ICUC9 - International Conference on Urban Climate







Thermal notation as a design tool

Contents

- •Walking
- Outdoor thermal comfort
- •Methodology of Thermal Walks
- •Thermal Diversity
- Thermal Notation
- Conclusions





Utilitarian / Recreational

Walking satisfies the needs for the smallest scale of transport and for healthy physical activity

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Patterns of Movement

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		 Stop and go
dir	directionality	Meandering
		• Changes of direction
		Strolling
	speed	• With a goal
	~~	 While talking







Thermal Comfort Outdoors

Relevant Studies

researcher : static	
subjects: dynamic	

Street orientation

- •Old city vs. new city
- Comparison between geometries
- •Microclimatic schemata
- •Parks vs. urban spaces





Thermal Comfort Outdoors

in movement

Relevant Studies







Thermal Walks a methodology that combines microclimatic monitoring with sensewalking techniques

Hybrid Methodology

researcher with portable equipment : walking

Monitoring of microclimatic conditions

- •Climatic simulation
- Group walks and survey

subjects: walking Longitudinal study





Thermal Walks a methodology that combines microclimatic monitoring with sensewalking techniques









O standing
 >>> walking
 ➤ sitting



n.



Thermal Walks in Rome





Thermal Walks Rome









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Six points along the Campo dei Fiori - Piazza Cairoli walk in Rome: same weather but different microclimates and different people and vehicle frequentation.

Rome

1-1

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Six points along the Seven Dials - Covent Garden walk: same weather but different microclimates and different people and vehicle frequentation.

London

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Rome

summer

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Rome winter

Rome

uturs Urbains Vasilikou & Nikolopoulou (2015) ICUC9 - International Conference on Urban Climate

Thermal Walks questionnaire

- 1) How do you find the thermal environment at this precise moment?
- a) Temperature: Cold / Cool / Neither warm nor cool / warm / hot [ASV]
- b) Wind: no wind / breeze / OK / windy / too windy [Windvote]
- c) Sun : would like more / OK / too much sun [Sun vote]
- 2) Do you feel a thermal variation at ... in relation to your previous sensation?
 Colder / Cooler / No variation / Warmer / Hotter [dASV]
 2) Volume in the interval of the senset of the se
- **3)** You find this:

Uncomfortably cold / uncomfortably cool / Comfortable / uncomfortably warm / uncomfortably hot [PTC]

A visualisation method of objective and

Thermal Notation Example

Applications in urban design Urban Futures Social revitalisation

Public engagement

uturs Urbains

LES BALADES THERMIQUES PARISIENNES

JEUDI 19 ET SAMEDI 21 JUIN 2014 Point de rencontre : Av. Parmentier et Rue du Faub. du Temple (metro Goncourt)

UNE NOUVELLE FAÇON DE REGARDER VOS RUES ET ESPACES PUBLICS

Point de rencontre: M Goncourt

Place de la République

Afin de sensibiliser les marcheurs de la ville sur l'intérêt du confort thermique urbain, notamment les variations thermiques entre différents lieus dans le centre-ville, le Laboratoire ACS (ENSA Paris-Malaguais) et l'Universite de Kent (Royaume Uni) vous propose deux jours de balades thermiques les jeudi 19 et samedi 21 juin 2014 au guartier de la Place de la République, évènement participatif.

Le principe de ces balades ? Comparer, pendant les heures chaudes de la journée, les conditions objectives du microclimat de différentes rues et places avec la perception thermique subjective des marcheurs. Vous découvrirez ainsi l'influence de microclimats sur nos habitudes de mouvement pédestres et nos réactions inconscientes sur le changement dynamique des conditions thermiques qui se répercutent directement sur la santé et le confort urbain des marcheurs et aussi sur la vitalité du quartier...

1ère journée de balades : jeudi 19/06/2014 deux sessions à 12h00 et à 14h00.

2ème journée de balades : samedi 21/06/2014 deux sessions à 12h00 et à 14h00.

Pour en savoir plus contactez Carolina Vasilikou, chercheur et architecte ingénieure du Laboratoire ACS, par mail à carol.vasilikou@gmail.com

Paris Rue de Faubourg du Temple

low connectivity

high connectivity

Vasilikou C. (2014). The Role of Urban Morphology and Pedestrian Movement in the Perception of Thermal Comfort in Historic City Centres: Spatial Sequences in Rome and London. PhD Thesis. Canterbury: University of Kent.

Changing Cities II Spatial , Design, Landscape and Socio-Economic Dimensions 22-26 June 2015, Porto Heli, Peloponnese, Greece

Paris Rue de Faubourg du Temple

Vasilikou C. (2014). The Role of Urban Morphology and Pedestrian Movement in the Perception of Thermal Comfort in Historic City Centres: Spatial Sequences in Rome and London. PhD Thesis. Canterbury: University of Kent.

high visibility

low

Mobilités Urban Urbaines Pedestrian Pédestres Mobilities Vasilikou & Nikolopoulou (2015) ICUC9 - International Conference on Urban Climate

Place de la République

Point de rencontre: M Goncourt

Thermal Walks in Paris

Thermal Notation Application

Place de la Republique

Bd Jules Ferry

Rue Bichet

Conclusions

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Development of design guidelines for pedestrianisation
Proposal for climate-responsive spaces (hot/cold spots)

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