The journal of an association of institutes concerned with the quality of built environment. The publishing framework in shaped around the forces which act on built environment, which maintain, change and transform it. The content consists of articles which deal with these issues and is in particular with responsive, self-sustaining and resilient environments which have the capacity to respond to change, provide user choice and value for money.

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Aims
The Open House International Association (OHA) aims to communicate, disseminate and exchange housing and planning information. The focus of this exchange is on tools, methods and processes which enable the various professional disciplines to understand the dynamics of housing and so contribute more effectively to it.

To achieve its aims, the OHA organizes and co-ordinates a number of activities which include the publication of quarterly journal, and, in the near, a future international seminar and an annual competition. The Association has the more general aim of seeking to improve quality of built environment through encouraging a greater sharing of decision-making by ordinary people and to help develop the necessary institutional frameworks which will support the local initiatives of people in the building process.

International Seminar/Workshop
To be held annually and hosted by a member institute. Explores the interlocking forms of public/private relationships which are emerging in housing and settlement development.

The competition
To be sponsored annually, in connection with the Seminar. Covers principles, methods and practices which may be transferable and interchangeable in evolutionary planning, neighborhood and housing design. An international panel of judges select the top submissions.
## Contents

**open house international**  **march 2010**  **vol.35 no.1**

Open Issue: Design Options, Housing Adaptation, User Evaluations, Spatial Qualities, Housing Sustainability, Open Building, Smart Home Systems, Architecture and Urban Design.

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Editorial</td>
<td>Nicholas Wilkinson</td>
</tr>
<tr>
<td>6</td>
<td>REDUCING RISK IN A CHANGING CLIMATE: CHANGING PARADIGMS TOWARD URBAN PRO-POOR ADAPTATION</td>
<td>Christine Wamsler</td>
</tr>
<tr>
<td>26</td>
<td>A THEORETICAL APPROACH FOR ASSESSING SUSTAINABILITY IN HOUSING ENVIRONMENTS</td>
<td>Beser Oktay Vehbi, Ercan Hoskara, Sebnem Önal Hoskara</td>
</tr>
<tr>
<td>37</td>
<td>HOUSING ADAPTATION FOR ADULTS WITH AUTISTIC SPECTRUM DISORDER</td>
<td>Magda Mostafa</td>
</tr>
<tr>
<td>49</td>
<td>ARCHITECTS’ DESIGN OPTIONS IN SELF BUILT HOUSES: LESSONS FROM BANGLADESH</td>
<td>Tareef Hayat Khan, Jia Beisi and Tapan Kumar Dhar</td>
</tr>
<tr>
<td>57</td>
<td>USERS’ EVALUATIONS OF HOUSE FAÇADES: PREFERENCE, COMPLEXITY AND IMPRESSIVENESS</td>
<td>Aysu Akalin, Kemal Yildirim, Christopher Wilson &amp; Aysun Saylan</td>
</tr>
<tr>
<td>66</td>
<td>THE QUARTER: A COMPLEX OF NEIGHBOURHOOD UNITS IN TURKEY</td>
<td>Ayhan Usta, Gülay K. Usta</td>
</tr>
<tr>
<td>74</td>
<td>ASSESSING LAGUNA DISTRICT’S SPATIAL QUALITIES IN GAZIMAGUSA, NORTHERN CYPRUS</td>
<td>Mukaddes Fasli, Farnaz Pakdel</td>
</tr>
<tr>
<td>83</td>
<td>BOOKREVIEW</td>
<td>Yonca Hürol</td>
</tr>
</tbody>
</table>

**NEXT ISSUE:** Perspectives in Sustainable and Healthy Housing

**Guest Editor:** Dr. ir. Evert Hasselaar, OTB Research Institute of Delft University of Technology, The Netherlands

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Previous Issues

vol. 34 no. 4
OPEN HOUSE INTERNATIONAL

Editorial
Nicholas Wilkinson
Evaluation Of The Occupation And Evacuation Of Peñalolen Settlement, Santiago De Chile - Julián Salas Serrano
Growth Patterns In Incremental Self-Build Housing In Chile - Rodrigo García Alvarado, Dirk Donath, Luis Felipe González Böhme
Flexible Design Of Public Housing In Iqaluit, Nunavut, Canada - Elizabeth Debicka & Avi Friedman
Continuity, Utility And Change: The Urban Compound House In Ghana - S. O. Afram & David Korboe
Analysing Housing Quality: Belerko Housing Settlement, Trabzon, Turkey - Pelin Dursun & Gulsun Saglamer
Traditional European squares in contemporary urbanism: Dubrovnik’s medieval squares - Tigran Haas
Tradition And Modernism In Yoruba Architecture: Bridging The Chasm - Olusola A. Sonaiya & Ozgur Dincyurek
Learning From Housing: A Retrospective Narrative Of Housing Environments In North Cyprus - Resmiye Alpar Atun & Hifsiye Pulhan

Guest Edited by Nicholas Wilkinson, Eastern Mediterranean University, Faculty of Architecture, Gazimagusa, Mersin 10, Turkey

vol. 34 no. 3
OPEN HOUSE INTERNATIONAL
Theme Issue: HOME, MIGRATION AND THE CITY: Spatial Forms & Everyday Practices in a Globalizing World

Editorial
Ayona Datta
Urban Second Homes: Temporal-Dwelling in London - Karen Lee Bar-Sinai
Asian and Latino immigrants’ preferences for walkable sub-urban neighbourhoods - Shenglin Chang
Tianjin’s Worldly Ambitions: From Hyper-Colonial Space to “Business Park” - Maurizio Marinelli
Migrant Housing in the City and the Village: From Melbourne to Zavoj - Mirjana Lozanovska
Home is Where the Heart Abides: Migration, Return and Housing in Dakar, Senegal - Giulia Sinatti
Identity and Representations of Gated Communities in Bangalore, India - Elizabeth Chacko and Paul Varghese
Contested Terrains: Visualising Globalisation in Global Cities - Jerome Krase
‘HOMELESSNESS & HOPE’ - Johannesburg’s Ponte City - Judith Erasmus
Being at Home: Space for Belonging in a London Cafe - Suzanne M. Hall

Guest Edited by Ayona Datta Cities Programme, London School of Economics, UK.
Previous Issues

**vol. 34 no. 2**

OPEN HOUSE INTERNATIONAL
Theme Issue: DESIGNING EDIBLE LANDSCAPES (DEL)

**Editorial**

Vikram Bhatt and Leila Marie Farah
Tenure and Land Markets for Urban Agriculture - Mark Redwood
How urban agriculture is reshaping periurban Beijing? - Zhang Feifei, Cai Jianming, Liu Gang
Designing for Urban Agriculture in an African City: Kampala, Uganda - Jeanne M. Wolfe and Sarah Mccans
Participatory design of public spaces for urban agriculture, Rosario, Argentina - Marielle Dubbeling, Laura Bracalenti and Laura Lago
Continuous Productive Urban Landscape (CPUU): Essential Infrastructure and Edible Ornament - Andre Viljoen and Katrin Bohn
Designing for Food and Agriculture: Recent Explorations at Ryerson University - June Komisar, Joe Nast, Mark Gorgolewski
Improvement of inadequate housing via urban agriculture in Nairobi, Kenya - Michael Honing
Jardins communautaires et sécurité alimentaire - Daniel Reid
The Edible Landscape of a Newfoundland Outport - Robert Mellin
The concept of urban agriculture renewed for cities of the south - André Fleury, Awa Ba, Ha T.T. To

Guest Edited by Prof. Vikram Bhatt and Leila Marie Farah McGill University, Minimum Cost Housing Group, School of Architecture, Montreal, Canada.

**vol. 34 no. 1**

OPEN HOUSE INTERNATIONAL
Theme Issue: SHAPING THE FUTURE OF LEARNING ENVIRONMENTS: Emerging Paradigms and Best Practices

**Editorial**

Ashraf M. Salama
Research based design of an elementary school - Henry Sanoff
Educational Buildings as 3D Text Books: Linking ecological sustainability, pedagogy and space - Clare Newton, Sue Wills & Dominique Hes
Design for Communication: Post-Occupancy Evaluation of Classroom Spaces - Joy Rathbone
The Users in Mind: Utilizing Henry Sanoffs Methods in Investigating the Learning Environment - Ashraf M. Salama
Topographies and Shrines: Creating Responsive Learning Environments - Iris Aravot
Spatial and educational patterns of innovation for charter schools - Pamela Harwood
Socio-cultural sustainability of future learning environments: The case of the new Kuwait University Campus - Yasser Mahgoub
Does place really matter to students with learning disabilities? A study of three university campuses - Susan Whitmer
Design intentions and users responses: Assessing Outdoor Spaces of Qatar University Campus - Ashraf M. Salama
Exploring Outdoor Education and Research in Architecture - Pedro Serrano Rodríguez & Luis Felipe González Böhme
The Future Setting of the Design Studio - Burcu Senyapili & Ahmet Fatih Karakaya
A “Globalized” Studio Environment: Configuring Reflexive Spatial Agendas - Michael Jenson

Guest Edited by Dr. Ashraf Salama, Queen’s University, Belfast, Northern Ireland.
NEXT ISSUE

Vol.35 No.2 2010

Perspectives in Sustainable and Healthy Housing

Guest Editor: Dr.ir. Evert Hasselaar, OTB Research Institute of Delft University of Technology, The Netherlands

Abstract

The topic of Sustainable and healthy housing was boosted by pollution issues in the 1960’s and the energy crises of the 1970’s. In 1987 the first international conference on Indoor Air Quality was held. Which topics in building energy and environmental health are important for today’s generation of students and teachers? Climate change has impacts on urban life and on housing in both developing and developed countries. The impact of climate change on housing and health in the London city area is explored, focusing on the impact of overheating on the levels of thermal comfort and heat-related health risk. The housing sector has set high ambitions for CO2 emission reduction. Housing managers face the dilemma of constantly picking low hanging fruit or to improve the performance level to the highest possible standards. The passive house strategy represents the high-end option and claims the best results on the long run. However, health risk conditions are not only a problem in old and poor quality housing stock, also in modern dwellings with user-unfriendly or poorly used installations. Occupant support for technical measures is needed and even more: energy adapted behaviour is needed in support of the ambitious CO2-reduction goals. Different strategies are followed to include the occupant in housing maintenance and renovation and to optimize the mutual benefits of social processes and technical measures. In the private housing sector, cooperative planning reveals preferences in sustainable and healthy housing that are neglected in mainstream construction activities. The local community has a key role in bringing together different stakeholders to reach high performance quality in urban restructuring and renovation projects. Effective instruments range from design contests to subsidies that increase along with the sustainable and health performance level. The UK is a forerunner in instrumentation for assessing and improving housing health and safety. Since 2004 the rating system is used, shifting the attention to the effect of defects in housing. This special issue deals with technical challenges and solutions, but in the context of the social dimension of urban life.

CONTENTS

- Editorial: Evert Hasselaar
  The challenges of sustainable and healthy housing

- Laure Iltard
  Teaching Building Energy and (Environmental) Health Dynamics. What matters?

- Frank Wassenberg
  Sustainability in urban restructuring

- Inge Strassl
  Community strategies for improvement of energy efficiency

- Anna Mavrogianni
  Housing in the city and climate change. Summertime indoor thermal performance of London dwellings and its impact on health

- David Ormandy
  Housing Health and Safety: Shifting the Focus to the Effect of Defects

- Erwin Mlecnik and Edward Prendergast
  Pick low hanging fruit or focus on passive house renovation?

- Andrew Jamison
  The citizen perspective: Alley Flat Initiative in Austin

- Jürgen Suschek-Berger and Michael Ometzeder
  Inclusion of Occupants in Sustainable Refurbishment Processes in Multi-Storey Residential Buildings

- Henk Visscher
  Editorial evaluation
The last editorial dealt with the time based concept for buildings where adaptability responded to the need for change and variations. The concept actually is centuries old but only came to the fore with the advent of the office block. That in itself is nothing new but some architects have taken the principle of housing adaptability into forms which look like offices. Why not?

One of the best examples comes out of the architectural practice of DKV Architects, Rotterdam, the Netherlands. The project is a flexible apartment building with a parking garage in Slotervaart in the renewed Meer en Oever district of Amsterdam. The cylinder shaped block is six and a half meters above ground level. Situated near water it can be conceived as similar to a water tower. The architect Paul de Vroom states that with this type of building weight should be minimized hence the cylinder-like building has a steel construction of columns and beams with a concrete central core. The adaptability enables the dwelling unit size to vary from 2 penthouse apartments (275 meters sq) right the way through to six smaller units (90 meters sq) all on one floor. Within each of these units different floor plans can be made. This project has been documented by Paul de Vroom in TBA (Time Based Architecture) Volume 2.

Different but similar is the existing Jaegersborg water tower in Denmark. This existing water tower built in the fifties was transformed into a mixed used building consisting of a youth centre and small apartments. The architects were Dorte Mandrup Architects who won the competition for the conversion in 2004. The water tower has twelve supporting columns with a water tower on top. This is still used as a water tower. The first three floors make up a leisure centre. The small apartments are located on floor four to floor eight. Whilst each floor is independent from each other they can be linked horizontally in many different ways to make larger or smaller dwellings. Each unit has its own capacity layout potential for variable plan configurations. This project has been documented by Dr. Bernard Leupen in TBA (Time Based Architecture) Volume 1.

Both projects have two levels of decision making, one for the support and one for the infill. The support capacity in both cases allows for a wide range of unit sizes and user design inputs generate variable floor plans. Making the support interesting and inviting is a challenge and one which is so well demonstrated here.

Nicholas Wilkinson

Photo by Jeroen Musch

Concept of Floor Plans

Plan by Dorte Mandrup Architects

Photo by Jens Lindhe
INTRODUCTION

Over the past decades, the frequency of so-called ‘natural’ disasters has grown significantly worldwide. The number of such disasters has quadrupled during the last 30 years, resulting in escalating human and economic losses (UNISDR 2006). It is the developing countries that bear the highest burden in terms of the human lives and proportion of gross domestic product lost in such disasters, and it is the urban poor who are particularly at risk. Poverty reinforces the vulnerability of the urban poor to natural hazards, and disasters make their already precarious living conditions worse, creating a vicious circle of poverty. The threat of climate change presents an even more worrying outlook, as the urban areas already at risk from disasters are the ones most likely to be impacted by climate change in the future (IPCC 2007a,b; Moser and Satterthwaite 2008).

Despite this, scant attention has been paid to the effects that disasters and other climate change impacts have on urban dwellers (Bicknell et al. 2009). Consequently, little consideration has been given to urban risk reduction both in theory and in practice. This is because the debates in disaster risk management and urban development planning have each evolved on a largely independent basis (Wamsler 2009). Recent developments have, however, promoted a process of integration of the two fields: a process that is currently being challenged by the growing climate change agenda.

Against this background, the paper’s objective is to assess the potential of the growing debate and increasing knowledge regarding climate change for further integrating disaster risk management into urban development planning. The paper explores, first, the interlinkages between disasters, climate change, and urban poverty (section 2) and, second, the changing discourses in disaster risk management and the integration and divergence processes associated with urban development planning (sections 3 and 4). The positive and negative influence of climate change on these discourses and processes are then analyzed (section 5), as is any potential such influence has for promoting the (better) integration of risk reduction into the work of urban actors (section 6). On this basis, a comprehensive risk management framework for urban pro-poor adaptation is presented. This addresses risk reduction associated with disasters and climate change and its sustainable integration into urban development, including pre- and post-disaster responses. As it takes into account the analysis of past advances, mistakes, and misconceptions, this framework has the potential to close the gaps identified not only between the fields of disaster risk management and urban development.

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1 Note that the term disaster (and thus disaster risk management) in this paper includes everyday small-scale and large-scale disasters, and thus changing climate conditions in terms of both climatic extremes and variability.

2 Note that the terms convergence and mainstreaming in this paper are also used to describe this integration process.
This paper is based on research undertaken from 2005 to 2009, combining expert interviews at a global level and field studies in El Salvador and Colombia, with follow-up desk-top studies. The methodology was based on the idea of ‘transdisciplinarity’ to assure a fusion of scientifically based knowledge with the experience-based know-how of lay people (Dunin-Woyseth and Nielsen 2004; Gibbons et al. 1994; Nowotny et al. 2001). Different stakeholders— including disaster risk and climate change experts, urban planners, architects, practitioners and urban dwellers living at risk—took part in a collective endeavor to achieve research excellence combined with relevance for practice. As a first step, the interlinkages between disaster risk and urban planning were analyzed, together with how these are addressed in practice. Methods included text review, group discussions, semi-structured interviews, and observation. On the basis of the gaps and challenges identified, strategies and measures for improved urban risk reduction were developed. The next step took the form of a series of workshops in Costa Rica, El Salvador and Sweden, at which participants were asked to use and evaluate preliminary research outcomes with the aim of achieving a cross-fertilization of ideas and knowledge from different sources. This was finally followed up by desk work during 2008-2009, which analyzed the outcomes in the light of recent developments, as well as the similarities and differences between disaster risk reduction and climate change adaptation.

DISASTERS, CLIMATE CHANGE AND URBAN POVERTY

This section explores the interrelation between disasters, climate change, and urban poverty, and shows how urban development planning, rather than fostering urban resilience, often contributes to an increase in disasters, climate risk, and poverty. In the following, key aspects are highlighted to illustrate the reciprocal interconnection between (a) disasters and climate change, (b) disasters and urban development, (c) urban development and climate change, and finally (d) disasters, climate change, and urban poverty.

Disasters and climate change are closely interlinked. In fact, although not all disasters can be associated with climate change and increased greenhouse gas emissions, on average two-thirds of all disasters are climate-related (UNISDR 2002) and weather-borne disasters account for almost all the growth in the number of natural disasters since 1950 (Satterthwaite et al. 2007). The increase or decrease in greenhouse gas emissions due to disasters, which in turn influence climate change, is the reverse interlinkage, although less studied. Examples are (a) wild fires and volcanic eruptions releasing carbon emissions that are stored in biomass, (b) volcanic dust and associated pollution resulting in a reduction of direct solar radiation and thus global cooling, and (c) the destruction of forests or other land use changes, reducing the availability of carbon sinks.

Both climate-related and non-climate-related disasters negatively impact urban development. Historically, urban centers were and still often are perceived as places of refuge from disasters and as buffers against environmental changes (Pelling 2007). Today, however, they are better described as hotspots of disasters and risk (Pelling 2007), with disasters leading not only to the disruption of city functions but also to intensification of urban hazards, the creation of new hazards, increased urban inequalities and poverty, and a reduction in the development resources invested in the built environment (Wamsler 2009; Bosher 2008).

Even worse, urban development is not only affected by disasters, but is also one of the main reasons for increased risk. In fact, urban development frequently increases vulnerability to natural hazards, leads to the creation of new hazards, and intensifies exposure to existing hazards. The creation of intensified or new hazards as a result of inadequate urban development is not only related to the production of greenhouse gases but can also be caused by a number of other issues, including lack of open space provision and proper infrastructure to absorb storm water, as well as inadequate settlement and building features, such as electrical equipment that attracts lightning (World Watch 2007). Furthermore, urban development increases risk by constantly changing the patterns of vulnera-

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3 This paper thus builds on the outcomes of research undertaken from 2005 to 2008. Based on follow-up desk-top work during 2008-2009, these outcomes were further expanded and are presented in this paper.
Reducing Risk in a Changing Climate... abilities and hazards (making them virtually impossible to control), and by reducing the coping capacities of the urban poor and of national and municipal institutions to deal with disasters and risk (Wamsler 2009).

Moreover, urban development and climate change are also directly connected, and frequently have adverse effects on each other. In simple terms, inadequate urban development strongly increases greenhouse gas emissions through, for instance, changes in land use and increasing energy consumption, while climate change negatively impacts urban growth (DFID 2004c; World Bank 2008). The negative impacts on sustainable urban growth of changing climatic conditions do not simply amount to an increase in the number and frequency of weather-borne disasters and associated socioeconomic and physical damage in urban areas. Other equally worrying examples are the increased spread of vector-, food-, and water-borne diseases, as well as shortages of energy supply, food, and water, all of which place intolerable pressure on urban infrastructures and services (IPCC 2007b).

More indirect impacts of climate change on urban development are the expected millions of environmental refugees and urban migrants created by (rural) disasters, such as sea level rise, desertification, and catastrophic weather-induced flooding or landslides. As Bogardi, Director of the Institute for Environment and Human Security at the United Nations University, Bonn, argues: ‘There are well-founded fears that the number of people fleeing untenable environmental conditions may grow exponentially as the world experiences the effects of climate change.’ Other indirect impacts are rising temperatures that thaw out the layer of permanently frozen soil below the surface of the land, or rising water tables due to sea level rise, which cause the ground to shrink and undermine the foundations of buildings. This results in damage to structures such as railway tracks, highways and houses, as well as landslides, which in turn can cause further destructions.

The examples show that the negative impact of climate-related disasters on urban development can be created both directly and indirectly by climate change. In turn, disasters reinforce other climate change impacts and global warming, again negatively affecting sustainable urban development. This can also be illustrated by climate-related flooding: this generally affects food security and the water and energy supply, which are already impacted by climate change. This, in turn, leads to land erosion, landslides, disease outbreaks, and contamination.

From the analysis above, it follows that climate change, disasters, and associated urban development intensify global poverty and deepen social divisions, affecting the poor more than the rich. In addition, both planned and unplanned urbanization cause climatic changes, are themselves affected by climate change, and influence the way in which climate change impacts the urban poor, thus causing negative feedback loops.

Despite the interlinkages and associated negative feedback loops just described, it is commonly argued that cities offer significant opportunities for combating the increasing impacts of disasters and climate change (World Bank 2008; Dawson et al. 2009). Cities, as hotspots of disaster risk, could also hold the key to slowing and eventually stopping climate change (Satterthwaite et al. 2007). Indeed, adequate housing and living conditions and pro-poor urban governance can be critical to the success of climate change mitigation and adaptation, including impact reduction and the support and care of those adversely affected (UN-HABITAT 2007).

CHANGING PARADIGMS OF DISASTER RISK MANAGEMENT

The predominantly negative impact of urban development on existing disaster and climate risk, as described in the previous section, is, among other things related to the fact that the discourses, paradigms, and related practice in the field of disaster risk management have evolved somewhat independently from those of urban development planning. In accordance with the focus of this paper, changes and paradigms are now analyzed that have influenced disaster risk management’s different divergence and integration processes with urban development planning and related programs.

The key concept underlying disaster risk management is the notion of risk. In essence, risk...
can be understood as the probability of adverse effects, while disaster risk management is seen as the reduction of that probability by minimization or prevention of those adverse effects. The way in which different research communities and stakeholders define risk dictates how risk management is addressed. Slovic (1999: 689) states that whoever controls the definition of risk controls the rational solution to the problem at hand. If risk is defined one way, the one option will rise to the top as the most cost-effective or the safest or the best. If it is defined another way, perhaps incorporating qualitative characteristics and other contextual factors, one will likely get a different ordering of action solutions. Defining risk is thus an exercise in power, as is its management.

Similarly, Douglas (1992) promotes the idea that ‘risk language’ has a social function in that it is often used to express blame and to accept or reject responsibility.

Risk research or science has a long tradition in sociology, psychology, philosophy, economics, and other disciplines. Its genesis was in the 1950s, and since then it has undergone a constant development, which has generated a constant development, which has generated various disciplinary trends, risk definitions, and theories (Persson 2007a). In the present context, it is mainly ‘outcome risk’ that is researched, that is, the consequences of certain well-defined events (Sahlin and Persson 1994). Moreover, contemporary conceptions of risk researchers are typically agent-centered. These entail that risk emerges in a decision situation (e.g. Luhmann 2005) and/or is man-made (e.g. Douglas 1992; Beck 1992). In fact, many risk researchers argue that a specific risk for a person exists or emerges only with his/her decision and that this risk is ‘manufactured’ and not of external, natural origins. Other risk researchers, such as Starr (1969), Rescher (1983), and Persson (2007b), disagree with these conceptions. In fact, they identify a so-called ‘risk-taker fallacy’, pointing out that there are also risks that people do not take, but (unintentionally) run. This recognizes that ‘risk runners’ are not necessarily synonymous with ‘risk takers’. Against contemporary conceptions, Persson (2007b) further argues with the so-called ‘risk production fallacy’, stating that not all risk needing to be managed is man-made. He thus suggests that risk man-made or natural has to be manageable in order to be called risk (as opposed to hazards, which Persson [2007b] defines as unmanageable).

In contrast with the risk research trends described above, disaster risk management is still a relatively new field of knowledge and activity that has undergone its own seemingly independent evolution. The field is developing slowly, as is its multifaceted process of institutionalization (Twigg 2004). An analysis of the existing literature shows that disaster risk management has emerged and is evolving, not so much from theory and science, but based on empirical work experiences. As Sperling and Szokeley (2005: 11) state, disaster risk management originated from humanitarian assistance efforts and the accumulated experiences of exposure to disasters and increasingly incorporated scientific advances. It has, in fact, evolved mainly through the practical use, and related analyses, of different approaches to managing risk that were carried out and evaluated by the humanitarian and development communities (cf. Wijkman and Timberlake 1984; Maskrey 1989).

Moreover, disaster risk management has developed in the opposite direction to risk research. Although, according to contemporary perceptions in disaster risk management, there is no such thing as a ‘natural’ disaster, risk was first understood and dealt with as a purely natural issue. That first understanding is referred to as the ‘naturalistic paradigm’ (Ferrero and Gargantini 2006) or the ‘technocratic approach’ (Bankoff et al. 2004); contemporary perceptions fall within the ‘multidisciplinary paradigm’, which states that all disasters are of socio-natural origin (Ferrero and Gargantini 2006). A description of the developments leading to these changes follows.

Traditionally, discussions about disasters took place in the arena of humanitarian emergency relief (Twigg and Steiner 2002). Until the 1970s the dominant view was that ‘natural’ disasters were synonymous with natural events (or so-called hazards), such as an earthquakes, floods, landslides, windstorms, volcanic eruptions, wild fires, water surges or drought. Disaster risk (R) was thus equated with hazard (H):

\[
R = H
\]

In other words, a natural hazard was, ipso facto, seen as a disaster. The magnitude of a disaster was considered to be a function of the magnitude of the hazard, with the latter being considered as an
inevitable one-off event (Twigg and Steiner 2002). Consequently, the emphasis not only of researchers, but also of national governments and the international community, was on pure disaster management, that is, on searching for ways to improve post-disaster assistance and, in the best case scenario, making advance preparations to improve existing response capacities (Aysan and Davis 1992). Consequently, in many countries of the developed and developing world, national emergency agencies were established or restructured during this period. For instance, in 1978 the Federal Emergency Management Agency of the United States of America (FEMA) was created to house civil defense and disaster preparedness. El Salvador’s National Emergency Committee COEN was founded in 1976 (Decreto No. 498).

From the early 1970s onwards, urban actors became increasingly involved in the ongoing discussions about disasters, first, because of the need for adequate shelter in times of emergency and reconstruction (Davis 1975), and second, because it was found that the same natural hazard can have varying impacts on the built environment. A general trend thus evolved to associate disasters more with their physical impact than with their natural triggers. This promoted conventional building practices, engineering, and urban planning, mainly for formally built areas, as an important means of mitigating disasters (UNDRO 2004). An example from this period is UNDRO (1976), which focuses on physical planning, settlement management, and building measures. Its focus on the pre-disaster context is exceptional for this period. Despite this trend, in many countries efforts to reduce risk by these means have been minimal because of their high financial cost (UNDP 2004) and the fact that their failure to meet the needs of the most vulnerable was quickly identified (Stein and Vance 2007).

Beginning slowly in the 1970s, but with an increased emphasis during the 1980s and 1990s, researchers in the social sciences triggered a shift in thinking by pointing out that the impact of a natural hazard depends mainly on the vulnerability of the people affected (Maskrey 1993 1989; Wijkman and Timberlake 1984; Blaikie et al. 1994). In fact, with the advent of the term ‘disaster risk management’ (replacing the term ‘disaster management’), the focus of attention moved to social and economic vulnerability and was further reinforced by the mounting evidence that natural hazards have widely varying impacts in different countries/regions and on different social groups within those countries/regions (UNDP 2004). The idea that disaster risk (R) equates both to hazard (H) and to vulnerability (V) now started to be promoted by different researchers (e.g. Blaikie et al. 1994):

\[ R = H + V \]

From the early 1990s onwards, a growing literature emerged in Latin America and the Caribbean, Asia and Africa, born of increasing working experiences in disaster reduction and related social science research carried out by developing-country researchers and institutions. In Latin America, for instance, researchers joined forces through the social studies and disaster prevention network ‘La Red’, created in 1997. Literature related to this network forms the basis of many of the contemporary approaches to disaster risk management being discussed and advocated at the international level (e.g. Lavell 1994, 1999; Martínez López 1999).

In parallel, after a quiet beginning in the late 1970s, but mainly during the 1990s, engineering and urban planning were gradually removed from the disaster risk management agenda. Most (socially oriented) authors and program managers now accorded only secondary importance to the built environment and related planning practices. Indeed, they commonly neglected planning (including social housing and infrastructure development), perceiving it not as a vitally important risk reduction measure, but as a purely physical measure dealing only with the symptoms of the problem and not the causes (UNDP 2004).

During the 1990s to 2000s many pilot programs in the field of disaster risk management emerged in developing countries. These were prompted by the International Decade for Natural Disaster Reduction (IDNDR) between 1990 and 1999 and by a number of highly destructive large-scale disasters that occurred at the end of the
1990s, which resulted in increased resources being made available by international agencies. However, despite the start of a shift away from disaster management toward the reduction of risk, the post-disaster context (i.e. emergency relief, rehabilitation, and reconstruction) remained the focus of research and intervention, with only a few exceptions, such as those mentioned by Aysan and Davis (1992). However, within the post-disaster context, the debates shifted toward the ‘mainstreaming’ of disaster risk management. In El Salvador, for instance, several programs from this period, and the research related to them, emphasized the importance of mainstreaming disaster risk management into reconstruction programs (e.g. GTZ 2003a,b).

With the beginning of the 2000s, the growing experience gained within the above-mentioned pilot programs in the field of disaster risk management, combined with ongoing conceptual developments (e.g. Cuny 1983; Anderson 1985), resulted in the gradual evolution of a common understanding of disaster risk management. Disaster risk management is now generally seen as a mainstreaming (i.e. crosscutting) topic, and the causal factors of disasters are understood to be directly linked to development processes, which generate different levels of vulnerability (UNDP 2004). Hence, the integration of disaster risk management into development planning (i.e. the pre-disaster context) has become the main focus of the professionals working in risk reduction (cf. Lewis 1999; Pelling 2003b). The United Nations International Strategy for Disaster Reduction (UNISDR), established in 2000, has helped to raise the profile of this development-focused discourse, especially since the 2005 World Conference on Disaster Risk Reduction in Kobe, Japan. Since then, UNISDR has promoted the idea that the reduction of disaster risk requires a long-term engagement in development processes including urban development planning and hence promoted increased engagement in this field by international organizations.

This shift in thinking has been reflected not only in the literature, but also on the ground. Examples are the move away from emergency organizations toward development organizations as the national counterparts for disaster risk management. In this context, Lavell (1999:1) states:

One of the results if not one of the causes of the growing concern for the development impact of disasters has been an increase in the number and types of institutions involved with the disaster problematic. These are no longer limited to the humanitarian preparedness and response organizations as was essentially the case toward the end of the last decade.

Another example of how the shift in thinking has influenced practice can be seen in the ‘disappearance’ of pilot programs on disaster risk management, since disaster risk management is no longer understood as a separate working field or sector, but as a mainstreaming or crosscutting topic for all types of development sector programs. As a result, greater inclusion of special, but mainly added-on, disaster risk management components can be observed within different development sector programs. With sectors such as rural development, agriculture, and health apparently being more ‘popular’ than urban development, there is now almost a complete absence of urban disaster risk management (Wamsler 2009).

Today, disaster risk management is considered to be a constantly evolving and integral paradigm that not only incorporates most of the different trends and perceptions mentioned above, but is also indispensable for cost-effective development and sustainable poverty reduction. Within this framework, risk is defined by UNISDR (n.d.) as: ‘The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human induced hazards and vulnerable conditions.’ Accordingly, risk is conventionally expressed by:

\[ R = H \times V \]  

(3)

Compared to equation 2, this representation has

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\(^6\) Note that since the early 1970s, the issue of the relationship of disasters and development has been alluded to in intermittent written and verbal discussions; however, it faded only repeatedly, as increased demand for emergency action has focused on necessarily short-term responses (Lewis 1999:xiv).

\(^7\) See, for instance, www.unisdr.org/eng/about_isdr/isdr-mission-objectives-eng.htm

\(^8\) In this context, changing discourses in development studies also brought about the deconstruction of ‘poverty’, revealing its economic, political, social, psychological, and environmental components, and then reconstructed around the concept of vulnerability (Pelling 1997). Poverty researchers are now using it in an even broader way (e.g. Moser 1998).
improved, as, from a mathematical point of view, probabilities are multiplied and not summed. The multiplication further clearly illustrates that even if the hazard is small, the resultant risk can become multiplied and thus extremely high.

The ‘Pressure and Release (PAR) Model’ of Blaikie et al. (1994) looks in detail at the two different risk components: hazard and vulnerability. The model conceptualizes the role of hazard and the role of vulnerability in the production of risk and allows a theoretical chain of explanation to be constructed between global and local forces. Entitled the ‘progression of vulnerability’, this chain has three main levels: global ‘root causes’; intermediate ‘dynamic pressures’; and local ‘unsafe conditions’. Root causes, acting at the most remote, macro level, are best seen as dominant structures that underlie the allocation and distribution of resources and power. Unsafe conditions are the most visible producers of vulnerability and can be seen acting at the local household level. Examples could be substandard buildings or inadequate local economies and structures. Acting between the global and local forces are the intermediate, dynamic pressures ‘that “translate” the effects of root causes into the vulnerability of unsafe conditions’ (Blaikie et al. 1994: 24). Dynamic pressures can be, for instance, urbanization as well as inadequacies in training, institutional systems, or government regulations.

The growing interest of some researchers and practitioners in ‘responding to’ the negativity of the term ‘vulnerability’ and linking risk (and risk reduction) further with people’s positive capacities (C) and related livelihood assets/capital (Davis et al. 2004), was reflected in the development of the following extended risk equation (UNISDR 2002):

\[ R = H \times V / C \]  

The growing interest in capacities and associated assets/capital resulted in further emphasis being given to participatory bottom-up approaches for risk reduction, although at first the term ‘capacities’ was mainly related to the way people react during and in the immediate aftermath of disasters. Until recent years, related programs and learning experience came almost exclusively from the rural context. In both definitions (i.e. equations 3 and 4), vulnerability is today generally understood as the opposite or antithesis of resilience or resistance (Benson and Twigg 2007). On the basis of equation 4, and predicated on the development of disaster risk management as described above, risk reduction is usually based on an analysis of past disaster events and their associated hazards, vulnerabilities, and capacities, and not on disaster forecasts.

**CHANGING PARADIGMS - IN AN URBANIZING WORLD**

The near absence of urban disaster risk management, as identified in the previous section, is a subgroup of the general pitfalls to mainstream disaster risk management in development work that organizations have faced during the 2000s (Christoplos et al. 2001). However, compared to other development sectors, the integration of disaster risk management into urban development is confronted with additional challenges. One of the critical issues in this regard is the fact that the conceptual disaster risk management framework described in section 3 has evolved with a rural bias. In the main, related concepts such as risk and vulnerability, and tools such as vulnerability and capacity assessments, were developed with a rural focus and based on working experiences in rural environments (Pelling 1997; Davis et al. 2004; Wisner et al. 2004).

It is only recently that building and urban planning practices have once again started to be recognized by international agencies as important risk reduction measures and have re-emerged in the key literature (e.g. UNISDR 2005a; UNDP 2004). The most important drivers of this change have been the increasing experience (and thus recognition) of growing urbanization, the negative influence of urbanization on existing risk (Pelling 2007), and the differences between rural and urban disasters (Moser et al. 1996, Hamza and Zetter 1998; Pelling 2003a). However, alternative strategies needed to be sought to replace the conventional building and planning practices, which because of their deficits and the changing disaster risk management discourses, were gradually ‘deleted’ from the disaster risk management agenda from the late 1970s onwards (cf. section 3).

Increasing attempts have thus been made to factor risk reduction into more bottom-up, participatory urban planning strategies and programs and to ‘translate’ disaster risk management concepts and tools to the urban context (e.g. Mitchell 1999; Sanderson 2000, 2001). Examples are
approaches such as livelihood-based urban planning for disaster risk management, which was also implemented in the context of the CARE project entitled ‘Mainstreaming mitigation to reduce urban poverty’. This research has positively influenced these attempts, providing analyses of (a) urban dwellers’ coping strategies and associated assets/capital, (b) the practical needs of urban actors to sustainably reduce risk, and (c) past efforts to mainstream disaster risk management into urban development planning (Wamsler 2006, 2009).

Because of the rural bias in the field of disaster risk management mentioned above, local coping has been little systematized within an urban context (Twigg 2004). Advances in related issues have led to the identification of coping strategies for prevention, mitigation, preparedness, self-insurance, and recovery (Wamsler 2007). The last two were revealed to be crucial in terms of complementing conventional risk reduction efforts and helping slum dwellers to recover from disasters and also from local small-scale hazards. Such hazards were shown not only to have immediate and short-lived impacts, but also delayed and long-lasting effects. These effects cannot always be counteracted solely through measures aimed at preventing hazards, mitigating vulnerabilities, or improving people’s preparedness to respond in the immediate aftermath of a disaster. Risk financing and stand-by for recovery, which aim to increase people’s capacity to recover from hazards (and disasters), were thus identified to be an important complementary measures in terms of supporting the urban poor to better cope with disaster and climate risk (Wamsler 2007a, 2009). This has resulted in a better definition of the different measures available to reduce urban risk and, in turn, in the extension of the definition of risk to include the lack of capacity to recover from hazards/disasters (LCRec) as an additional risk component.

Moreover, some researchers have revealed a gap between the paradigms of disaster risk management and the practical needs of urban actors (Bosher 2008). According to Wamsler (2007b, 2009), planners and other urban actors have generally believed the risk management approaches, as described in section 3, to be of little use for their program planning and design. The main arguments put forward are: (a) the vagueness of the definition of disaster risk and its practical significance in identifying associated risk reduction measures; and (b) the vagueness of both the definition and the practical meaning of the term ‘mainstreaming’ of disaster risk management. Indeed, the few investigations that did advance the discourses on mainstreaming disaster risk management did not specifically address urban actors or urban development planning (e.g. Benson and Twigg 2006; IDB 2004a,b; IDEA/IDB 2005; Mitchell 2003; Tearfund 2005; UNDP 2004; UNDP/UNISDR 2006; UNISDR 2003, 2005b). Thus, these investigations are not, for the most part, applicable within the urban context. Only Benson and Twigg (2007) and Rossetto (2006) include some general aspects regarding construction design, building standards, and site selection.

This research further identified the increasing practical, but as yet unsustainable, efforts to mainstream disaster risk management within urban development planning. In fact, whenever intolerable conditions and needs on the ground were driving such an integration process (as was the case in El Salvador after Hurricane Mitch in 1998 and the 2001 earthquakes), it was often supported and implemented in such a way that there was an unfruitful overlapping of the two fields. In other words, the integration process resulted in only temporary improvements or even increased competition between different organizations and duplicated their efforts (Wamsler 2007b).

The developments described promoted new conceptual advances which began to influence the discourses in disaster risk management. These were guided by a desire to bridge the divide between urban research and practice, to better address urban actors’ needs for risk reduction, and to take into account new urban-specific knowledge on risk generation and coping. They led to an enhanced, more operational understanding of risk, which can be expressed through the following equation:

\[ R = H \times V \times LC_{Res} \times LC_{Rec} \]  

(5)

where LCRes stands for the lack of capacity to respond to disasters and LCRec for the lack of capacity to recover from disasters. Note that this understanding is not generally used in equation form in the literature. However, the written definition of risk is increasingly including capacities to recovery (e.g. UNISDR 2008b). Compared to equation 4, this definition does not mix variables with positive and negative connotations. In addition, each of the risk components is directly linked to specific risk
reduction measures. In fact, while equation 5 expresses the initial risk situation of a specific slum area at a given point in time, equation 6 (which follows) illustrates how this risk can be minimized through the implementation of well-defined risk reduction measures:

$$\text{R} = \frac{H}{P_{\text{Rev}}} \ast \frac{V}{M} \ast \frac{\text{LC}_{\text{Res}}}{P_{\text{Rep}}} \ast \frac{\text{LC}_{\text{Rec}}}{R_{\text{F}} + S_{\text{R}}}$$

where PRev stands for prevention, M for mitigation, PRep for preparedness, RF for risk financing and SR for stand-by for recovery. See Table 1 for the definition of the risk components and the respective measures mentioned.

As was the case with equations 1-4, the objective of the extended equations 5 and 6 is not to actually calculate risk, but to help tackle risk more effectively. The extension of the definition of risk, in comparison to former concepts (described in section 3), can help urban actors to, first, analyze existing risk in a specific area and, second, search for adequate measures to reduce each of the risk components. This allows the complementary risk reduction measures to be differentiated one from the other, which, subsequently, helps in properly designing and combining them (Wamsler 2009). In this context, the capacities and associated assets/capital for preventing, mitigating, preparing, risk financing, and recovery would need to be analyzed, as indicated in equation 6.

In addition to extending the understanding of risk and better defining the measures to reduce it,
this study has supported further advances regarding the concept of disaster risk management integration (Wamsler 2007b). On the basis of past failures and lessons, this concept has been divided into disaster risk management programming and disaster risk management mainstreaming, and a set of different strategies has been identified to complement each. Three strategies relate to the integration of disaster risk management into program implementation at local household level; two to the integration of disaster risk management at the institutional level of the implementing and donor organizations; and another two to the promotion of sustainable disaster risk management in the work of other related implementing and training institutions (see Table 2). The conceptual changes described contributed to the existing body of knowledge at the global, national, municipal, and local levels, driving the convergence of urban development planning and disaster risk management. This is evidenced by the various references in sector-specific literature lists (of different universities and of key professional literature), on Web pages (such as the Web page of the ProVention Consortium), and in the publications of cutting-edge stakeholders and theoreticians (e.g. Benson and Twigg 2007; World Watch 2007; UN-HABITAT 2007; ProVention Consortium 2007; Satterthwaite et al. 2007; Bosher et al. 2007, 2008; Balamir 2007). The influence of the conceptual changes in practice has been demonstrated through their use in development programming by international and national organizations. Among the organizations that have made use of related concepts are FUSAI (Fundación Salvadoreña de Apoyo Integral), FUNDASAL (Fundación Salvadoreña de Desarrollo y Vivienda Mínima), CEPRODE (Centro de Protección para Desastres), UN-HABITAT (United Nations Human Settlement Programme), and Plan International. However, as is analyzed in the next section, the growing climate change debate and the increasing knowledge related to this pressing issue are currently challenging both the theoretical and practical advances in urban risk reduction.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
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<tbody>
<tr>
<td>Strategy 1</td>
<td>Direct stand-alone DRM/A</td>
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<tr>
<td></td>
<td>DRM/A programming (i.e. implementation of programs separately from and additionally to the organization’s core work) to specifically address risk and disaster occurrence.</td>
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<tr>
<td>Strategy 2</td>
<td>Direct integrated DRM/A</td>
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<td></td>
<td>Adding DRM/A programming elements to the organization’s core work to specifically address risk and disaster occurrence within existing program areas.</td>
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<tr>
<td>Strategy 3</td>
<td>Programmatic mainstreaming of DRM/A</td>
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<td></td>
<td>DRM/A mainstreaming within program implementation (i.e., adjustment of the core work of the organization) to reduce risk and increase the capacities of program beneficiaries to cope with risk and disasters (or, at least, to ensure that risk is not increased and capacities not reduced).</td>
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<tr>
<td>Strategy 4</td>
<td>Organisational mainstreaming of DRM/A</td>
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<td></td>
<td>Institutionalization of DRM/A to sustain and support its mainstreaming (and programming).</td>
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<tr>
<td>Strategy 5</td>
<td>Internal mainstreaming of DRM/A</td>
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<td>DRM for reducing the organization’s own risk (i.e. its offices and staff) and thus allowing it to become more disaster-resilient.</td>
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<tr>
<td>Strategy 6</td>
<td>Synergy creation for DRM/A</td>
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<td></td>
<td>Coordination with and complementation of the work of other (implementing) organizations for improved DRM/A mainstreaming (and programming).</td>
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<tr>
<td>Strategy 7</td>
<td>Educational mainstreaming of DRM/A</td>
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<td></td>
<td>Shift toward non-conventional sectoral planning to integrate DRM/A into the philosophies that drive related disciplinary and sector-specific work, by making universities and other training institutions (decide to) facilitate the sustainable integration of DRM into the sphere of activity of sector-specific actors.</td>
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</table>

**Source**: Adapted from Wamsler (2009)

**Table 2**: *Systematization of the concept of disaster risk management integration/mainstreaming*

Note that, in order to factor changing risk patterns into disaster risk management, changes in the original concepts presented in section 4, are in Italics (cf. section 6). DRM = Disaster risk management. A = Adaptation.
CHANGING DISCOURSES - IN A CHANGING CLIMATE

With climate change challenging the convergence of disaster risk management and urban development planning, the following questions are inevitable: (a) how does climate change impact existing risk? (b) how does climate change impact existing risk reduction efforts? and (c) how does climate change influence the current paradigms of disaster risk management, that is, the understanding of risk, risk reduction, and the integration of risk management into urban development planning?

Impact of climate change on existing risk

As already described in section 2, climate change and disasters are directly interlinked. The way disaster risk is currently defined, as described in previous sections (cf. equations 4 and 5), can assist in further analyzing the interconnection between climate change and disasters in a more systematic way. This definition is based on the understanding that hazards (both natural and human-induced) do not, themselves, cause disasters. In fact, disasters occur because of the combination of a hazardous event, an exposed, vulnerable area, and ill-prepared populations, communities, and institutions. Climate change influences all three aspects, as illustrated in Table 3.

Impact of climate change on existing risk reduction efforts

The previous section makes it clear that current informal and formal mechanisms for disaster risk management and related economic planning may not be adequate in the future. Indeed, in many countries, existing mechanisms already fail to meet the current level of risk (Sperling and Szekely 2005). Most infrastructure developments or settlement policies of the past did not, for instance, anticipate the hazards or the magnitude of hazards of today. Worse still, there may be no experience that can be used as a basis for addressing the changing patterns of risk now forecast for the future (Sperling and Szekely 2005; Schipper and Pelling 2006; Tearfund 2008; Thomalla et al. 2006). Table 4 summarizes the possible impacts of climate change

| Impact of climate change on risk (i.e. all three risk components/factors) |
|-----------------------------|---|
| Hazard exposure             | Changes in the intensity, magnitude and frequency of existing climatic hazards of a specific region, which, in turn, can lead to disasters. Examples are the increased frequency of: |
| (potential climate-related hazards are, for instance, wind, rain/precipitation, snow, sunshine, temperature/heat, etc.) | - Higher maximum temperatures and heat waves – and thus related drought and wildfires, |
|                             | - Increased summer drying – and thus related drought and wildfires, |
|                             | - Intense precipitation events – and thus related floods, erosion, and landslides, |
|                             | - More intense peak wind intensity – and thus windstorms (e.g. hurricanes), |
|                             | - More frequent El Niño events – and thus related drought and floods, |
|                             | - Emerging hazards induced by climate change that may be new to a region in recent history and often present thresholds events. Examples: |
|                             | - Retreat of glaciers – and related sea-level rise, floods, and/or glacial lake outburst, |
|                             | - Spread of climate-sensitive diseases into regions where these diseases did not previously occur, |
|                             | - Wildfire, |
| Vulnerability of communities to specific hazards (both climate-related and non-climate-related) | Increasing vulnerability through a range of different aspects directly caused by climate change, particularly through: |
|                             | - Ecosystem degradation (e.g. erosion, thaw of permanently frozen soil layer, resulting, for instance, in unstable constructions; or coral bleaching and related coastal floods), |
|                             | - Shortages in energy, water, and food availability (e.g. leading to malnutrition, disease, conflict), |
|                             | - Changes to climate-sensitive livelihoods (e.g. damage to crops, reduced yields, resulting, for instance, in malnutrition and displacements), |
|                             | - Indirect impact of climate change through climate-related hazards/disasters on vulnerability. Examples are: |
|                             | - Displacement of populations due to disasters (e.g. environmental refugees, rural-urban migration, and related urbanization can in turn lead to increased hazard exposure), |
|                             | - Disruption or loss of agriculture, settlements, commerce, and transport, increasing the pressures on urban infrastructure, |
| Lack of capacity to respond and recover (from hazards’ disasters) | Reduction of the capacity of people, communities, and institutions to respond to and recover from hazards/disasters directly caused by climate change, for instance, through: |
|                             | - Shortages in energy supply, affecting communication mechanisms and structures, |
|                             | - Increasing number of multi-hazard events, making adequate responses difficult, |
|                             | - Indirect impact of climate change through climate-related hazards/disasters. Examples are: |
|                             | - Reduced community cohesion and action for risk reduction with the better-off and labor force leaving because of climatic stressors, |
|                             | - Lack of knowledge on the locally adequate coping strategies of displaced people, |
|                             | - Impact/damage on vital institutions (micro financing institutions, and organizations, etc.), |
|                             | - Withdrawal of insurance companies from the increasing number of risk areas, |


Table 3. Impact of climate change on existing risk
on disaster risk management programs and their implementation. It also illustrates how the characteristics of the current disaster risk management paradigms, as described in sections 3 and 4, relate to these impacts.

Impact of climate change on changing paradigms of (urban) disaster risk management
The last two sections show that if sustainable risk and poverty reduction are to be achieved, climate change concerns need to be factored into the understanding of risk, into the concept of disaster risk management, and into the strategies for integrating disaster risk management and urban development planning. However, despite the obvious interlinkage between disasters and climate change (and the efforts to tackle related risk), the climate change and disaster risk management discourses have rarely overlapped (Sperling and Szekely 2005; Satterthwaite et al. 2007; UNDP 2002; UN IATF/DR 2006; Schipper and Pelling 2006).

The climate change discourses developed step by step from initial concerns regarding the causes of climate change, through the desire to model its potential effects, to concerns about how societies and economies could reduce greenhouse gas emissions and also adapt to changing climatic conditions (UNDP 2002). In fact, the discourses that emerged at the end of the 1990s first focused on the effects of greenhouse gas emissions on altering patterns of hazard, leading to increasing disaster risk and, consequently, disasters. In other words, the dominant view was that climate risk was synonymous with a climate-related hazard, such as temperature, wind, and precipitation and associated drought, wildfire, sea level rise, flooding and landslide. Climate risk was thus equated with hazard (H), which can be compared with how disaster risk management was understood during the 1960s (see section 3 and equation 1). Unlike disaster risk, however, climate risk refers only to weather-related and human-induced hazards. The initial focus of attention was thus on policies and programs to reduce greenhouse gas emissions (Thomalla et al. 2006). The climate change community calls these measures ‘mitigation’ while in the...
Christine Wamsler

With increasing evidence accumulating on climate change and its potential impacts, these discourses broadened toward the argument that greenhouse gas emissions and the subsequent change in climate variability influence not only hazards, but also patterns of vulnerability (UNDP 2004). Today, discussions are dominated by this understanding, namely, that climate change causes disasters through increasing not only the number and the intensity of hazards, but also the vulnerability of people facing these hazards. In other words, the predominant idea is that climate risk is equated with hazard (H) and vulnerability (V) (cf. equation 2).

The changes described led to an increasing interest in addressing not only the causes of hazards, but also people’s vulnerability to those hazards, triggering a growing adaptation agenda. Strong emphasis here is placed on physical vulnerability. In other words, there is comparatively little concern regarding social, economic, environmental and organizational vulnerabilities. As Prowse and Scott (2008: 42), for instance, state: ‘Adaptation is about tackling the effects of climate change, mainly through increasing the resilience and capacity to cope with its physical impacts.’

The discourses in climate change adaptation are, thus, today strongly dominated by a major infrastructure agenda, with a focus on the formally built environment, which is reminiscent of the disaster risk management discourse of the early 1970s (cf. section 3). This trend is even stronger in the developed world. Consequently, as was the case back then, engineers, planners, and other urban actors are becoming increasingly involved, and physically based terminology, such as ‘climate-proofing’ or ‘climate protection’ abounds (e.g. DFID 2004g, Moser and Satterthwaite 2008).

The developments described show how it is only recently that the scientists and organizations examining the problem of global climate change have gradually expanded their science-based discourse toward an interest in adaptation to changing climatic conditions. As stated by UNDP (2002: 14):

With this gradual turn to adaptation considerations and an increase in its salience, the climate change adaptation community has clearly commenced to take up on a topic that is very close and complimentary to the traditional preoccupations of the risk and disaster community. How to live with and adapt to climatic extremes and how to promote more resilient and secure communities are questions that are at the centre of concerns for both communities.

As a result, adaptation and disaster risk management measures can, for the most part, be seen today as synonymous. In simple terms, there is an extensive overlap between the two fields that address risk reduction in the field of weather-borne disasters (i.e. climatic extremes and variability). In addition to these activities, the field of disaster risk management also targets other, non-climate-related hazards, such as earthquakes and volcanic eruptions. However, as impacts related to these are influenced by climate factors, these activities are directly linked to adaptation. In contrast, the field of adaptation additionally targets the climate change impacts of increasing climate-related variability, disease, and shortages of water, food, and energy supply. However, as these are factors that influence people’s vulnerability to all types of hazards, the activities associated with them are directly linked to disaster risk management (Wamsler 2009).

Because of the overlap described, an international trend has recently evolved that promotes the integration of the disaster risk and climate change concerns of the so-called ‘Hyogo’ and ‘Kyoto’ communities, as well as the integration of their combined concerns into poverty reduction efforts (e.g. AFDP et al. n.d.; Davies et al. 2008; DFID 2004b-n; FAO 2008; IDS 2007a-d; Mani et al. 2008; McKenzie Hedger et al. 2008; Mitchell and van Aalst 2008a,b; O’Brian et al. 2008; Sperling and Szekely 2005; Tearfund 2008; Thomalla et al. 2006; UNISDR 2008a,b). The term ‘Hyogo community’ refers to the disaster risk management community that committed itself to the Hyogo Framework for Action 2005-2015 (UNISDR 2005a). The term ‘Kyoto community’ refers to the climate change (mitigation) community that committed itself to the Kyoto Protocol (established in 1997 and entered into force in 2005), an agreement under the United Nations Framework Convention on Climate Change (UNFCCC). However, the described trend seems mainly to be influencing disaster risk management paradigms, and, to date, has had comparatively little influence.
on discourses on adaptation.

The current climate change discourse is thus comparable with the disaster risk management discourse up to the 2000s, when disaster risk management was still seen as a new field of work and not as a crosscutting topic to be integrated in other fields. Consequently, there are still few strategic discourses on how to best mainstream adaptation into the (a) post-disaster response, (b) post-disaster recovery, and (c) pre-disaster planning of the different development sectors. Only few adaptation studies start to recognize this by referring to different 'aspects' of adaptation (e.g. Moser and Satterthwaite 2008). The terms used by Moser and Satterthwaite (2008) to describe the different aspects are 'immediate post-disaster response', 'rebuilding', 'pre-disaster damage limitation', and 'protection'; these terms are comparable to the integration of disaster risk management/reduction into the conventional disaster management phases/stages of post-disaster response, post-disaster recovery, and pre-disaster planning/development (divided here into preparedness and other type of risk reduction, such as prevention and mitigation).

Yet another development, similar to past advances in disaster risk management, is the emergence of interest in local capacities (and associated assets/capital) for adaptation (cf. equation 4), which is evidenced by the workshops and literature that is gradually beginning to appear on more participatory bottom-up approaches (e.g. Chatterjee et al. 2005; Huq and Reid 2007; IDRC 2008; Prowse and Scott 2008; Moser and Satterthwaite 2008). Only few, such as van Aalst et al. (2008) explicitly build on the knowledge base arising from participatory risk reduction (cf. section 3).

In conclusion, climate risk differs from disaster risk management, is the emergence of interest in local capacities (and associated assets/capital) for adaptation (cf. equation 4), which is evidenced by the workshops and literature that is gradually beginning to appear on more participatory bottom-up approaches (e.g. Chatterjee et al. 2005; Huq and Reid 2007; IDRC 2008; Prowse and Scott 2008; Moser and Satterthwaite 2008). Only few, such as van Aalst et al. (2008) explicitly build on the knowledge base arising from participatory risk reduction (cf. section 3).

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In conclusion, climate risk differs from disaster risk in that, to date, its understanding and mainstreaming has been little theorized, and discussions relating to the integration of the two concepts have been few. Despite this, it can be argued that current developments are positively advancing the discourse in disaster risk management toward (integrating) urban pro-poor adaptation. This is because of the coincidence of (a) the current dominant physical discourses in climate change adaptation, (b) the increasing efforts involved in merging the fields of disaster risk management and adaptation, and (c) the fact that increasing urbanization has, for the first time, led to more than half of the world's population living in urban environments. The results are, first, an increasing interest in understanding the specific linkages between urbanization, greenhouse gas emissions, and vulnerability to the impacts of climate change and disasters, and second, a greater involvement on the part of planners in addressing these issues.

**THE WAY FORWARD: A COMPREHENSIVE FRAMEWORK FOR DISASTER AND CLIMATE RISK MANAGEMENT**

The current discourses toward urban pro-poor adaptation, described in the previous section, have the potential to further drive integration of disaster risk management into urban development planning. However, this potential remains untapped. The barriers are threefold. First, past developments and associated knowledge in (urban) disaster risk management are frequently not taken into account. While literature emanating from the climate change community is frequently not based on the theoretical knowledge-base of disaster risk management (cf. section 3 and 4), it generally cites the commonly known measures for risk reduction and provides associated examples from disaster risk management (programs). The duplication of efforts, and the repetition of past and painfully learned lessons, are likely to be the result. Second, the current paradigms of disaster risk management, presented in sections 3 and 4, do not, in general, take changing climatic conditions into account. Third, the different terminology used by the professionals working in disaster risk management and climate change (adaptation) often presents a further barrier, rather than actually leading to cooperation (UN-IATF/DR 2006).

To harness potential arising from further integration of disaster risk management into urban development planning, the three barriers mentioned above need to be addressed. This can be done by (a) building on the current paradigms in (urban) disaster risk management, including the conceptualization of risk, risk reduction, and related mainstreaming, and (b) factoring into these concepts knowledge on the changes, both determinable and uncertain, in patterns of hazards, vulnerability, and capacities to respond and recover. Tables 1 and 2 show that the changes required are minimal but
crucial in terms of bringing about a more dynamic and flexible approach to risk reduction: one that leads to measures that are able to adjust to future changes in risk, as well as the uncertainty and longer planning horizons associated with it. The outcome is a comprehensive and pro-poor risk reduction approach that is tailor-made to also counteract the additional risks arising from climate change. It is based on people’s capacities/assets, and addresses risk associated with disasters and climatic changes and the sustainable integration of its reduction into urban development (including pre- and post-disaster responses). In this context, disaster and climate risk can be defined as: The probability of harmful consequences or losses resulting from the interactions between natural or human-induced hazards, vulnerable conditions, and the lack of capacity of households, communities, and/or institutions to respond to and recover from hazards or disasters. The term ‘harmful consequences and losses’ refers here to both small-scale and large-scale disasters, and thus not only to climatic extremes but also other climatic variability. Adaptation for risk reduction is thus understood as a crosscutting topic and approach that brings together all measures aiming to minimize existing or potential future risk within a society. Adaptation for risk reduction can be implemented—and is essential—before, during, and after disasters, and thus needs to be mainstreamed not only in development work, but also in disaster response and recovery.

CONCLUSION: CHANGING PARADIGMS TOWARD PRO-POOR URBAN ADAPTATION

In an era of climate change and urbanization, rethinking current approaches to risk and associated poverty reduction is inevitable. The way in which risk is defined by different actors and research communities influences how disaster risk management is addressed (i.e. investigated, promoted and implemented). An enhanced understanding of risk thus has a strong bearing on the type of measures implemented to tackle risk and the priorities given to them.

This paper shows how the paradigms in disaster risk management, built around the understanding of risk, have gradually developed since the 1960s. Step by step they have been shaped by (a) the growing debate and practical experience with respect to disasters and risk management, (b) new knowledge on urbanization and related risk generation, (c) efforts to bridge the divide between urban research and practice, and (d) more recently, the scientific advances on the issue of global climate change. These advances have been reshaping the separate debates of the disaster risk management and climate change communities, driving an urban pro-poor adaptation agenda. This offers the potential of overcoming the current shortcomings and incomplete approaches with regard to risk reduction and its integration into urban development planning. This potential remains untapped, as past developments in urban disaster risk management, and associated knowledge, are generally not taken into consideration. The changes required in current disaster risk management paradigms to address this situation are presented in this paper. The result is a comprehensive risk management framework for urban pro-poor adaptation that addresses the risk reduction associated with disasters and climatic changes and its sustainable integration into urban development planning.

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The presented framework is in line with the slowly increasing interest in participatory and asset-based adaptation (e.g. Moser and Satterthwaite), since it was elaborated on the analysis of the impact of disasters on people’s livelihoods and of their coping capacities and associated social, economic, environmental, institutional and physical assets.


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INTRODUCTION

There are two broad concepts to be discussed in this paper as a part of its main aim and objective. These are: sustainability and housing. It is believed that these broad concepts relate to each other in everyday life. These concepts will be briefly discussed in the following text by researching the appropriate literature, which will serve as the main aim of the paper.

The broad concept of sustainable development was discussed in the early 1980's, World Conservation Strategy (IUCN, 1980), but was placed firmly on the international agenda with the World Commission on Environment and Developments (WCED) publication of Our Common Future (Brundtland Report) in 1987, as well as with the landmark World Bank paper Environment, Growth and Development in the same year.

There are many definitions of sustainability and sustainable development. The most common and well-known definition is that put forward by the Brundtland Report. According to the Brundtland report: “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). This definition coins the essential components of the concept in simple terms: that of equity within and between generations, and that our ability to meet needs is bounded by the limitations of the earth’s resources. The concept of sustainable development was initially debated and interpreted in terms of the limitations of the earth to accommodate all human activities. For example, it is equated with a commitment to living within the earth’s limits in respect of the ‘carrying capacity’ of the biosphere, defined as the optimal animal population that a given ecosystem or environment can sustain, and collapse will occur if that capacity is exceeded (Healey and Shaw, 1993; Jacobs, 1999). Another definition reflects the managing of resources in such a way that enables the meeting of aspirations of society over a considerable period of time. Thus, sustainability refers to the ability of the natural environment, or the ecosystem, to accommodate human activities, especially those constituting economic development, in the long term.

Sustainability has three main dimensions: being ecological/environmental, economic and socio-cultural sustainability. The linkages between

Abstract
This study seeks to identify and propose a model for measuring and assessing the level of sustainability in housing environments based on a range of indicators. With this intention, the article is composed of four main parts. In the first part, the relationship between sustainability and housing is presented based on previous research; in the second part, a theoretical framework is put forward for sustainable housing. Then in the third part, sustainability indicators are discussed thoroughly within the context of indicator frameworks. In this section, the development, selection and measuring processes of indicators are also introduced. Finally in the fourth part, the model for measuring and assessing the level of sustainability in housing environments is presented. It is believed that this model will be used as a tool in the decision-making processes for the future development of existing housing settlements and their environments.

Keywords: Sustainable Housing, Sustainability Indicators, Sustainable Indicator Frameworks, Housing Indicators.
these different dimensions of sustainability should be fully taken into account, and they should not be isolated from one another (Khan, 1995; Goodland and Daly, 1996; Mitlin and Satterthwaite, 1996; Hart, 1999; Williams, et al, 2000; Chiu, 2003).

The second concept of this paper - housing, represents the physical manifestation of investment in a community, and directly relates to a primary concern of municipalities, that of land use and development, and provides a link between physical development and social and economic outcomes. Housing, therefore, appears to be a reasonable and potentially powerful medium for monitoring the social, physical, environmental and economic characteristics of community.

Moser (1987) describes housing as the constructed physical fabric of the house and the land on which it is built. Yet, housing is only part of the larger residential environment. Specific components of the residential environment are seen as those parts of the individual and community identity that impact on health and well-being. These components include: the living unit and the division of space within the unit, hidden space within the building, indoor and outdoor recreational areas, sanitary facilities, water supply, protection from weather, heat and noise insulation, neighborhood circulation patterns, and proximity to sources of noise and fumes (Kasl, 1979; Burden, 1979).

It is with great caution that the concept of ‘sustainability’ is applied to housing. V. Cammalleri & J. Nicell state that: “the notion of sustainable housing is often associated with such technical considerations as environmentally-safe materials and energy-efficient envelope design” (Cammalleri and Nicell, 1997: 31-35), and accordingly, we would still like to propose that a sound housing policy and its implementation could achieve significant socio-economic, environmental and physical sustainability.

In his essay: "Towards a Sustainable Housing Development" Dilip da Cunha - states that: "Housing, because of its ability, as a total entity, to satisfy all the levels of need - spiritual, cultural, economic and physical is in a unique position to be the leading sector, showing the way towards more holistic policies and sustainable development" (Da Cunha, 1988). Furthermore, the Brundtland Report recommends that: “the principle of sustainable development must be built into all activities” (WCED, 1987).

According to Agenda 21, “access to safe and healthy shelter is essential to a person’s physical, psychological, social and economic well-being and should be a fundamental part of national and international action (UNSD, 1992)”. This statement also describes the importance of housing - as shelter, in sustainable development.

Also the Global Report on Human Settlements, one of the publications of The Habitat Conference points out that: "the central importance of housing to everyone’s quality of life and health is often forgotten”. Decent housing contributes much to personal health and well-being, confidence and security; the ways in which housing is produced and exchanged have an impact over developmental goals such as equity and poverty eradication; house construction and location can influence environmental sustainability and the mitigation of natural disasters, and the design of dwellings both reflects and protects something important about culture and religious beliefs."

From these brief discussions above, it can be argued that housing is on the cutting edge of sustainability. Thus, housing environments have a crucial role to play in the sustainable development of cities, and, accordingly, they are an important component of the built environment, there is a need to have socially and environmentally sustainable housing environments in order to achieve attractive, sustainable and healthy living areas.

The multi-faceted scope of both the sustainable development concept and of housing by its nature, and the fact that housing is integral to urban sustainability, have underpinned the validity and the need to evaluate housing development and chart its future development from the perspective of sustainable development. The next section, therefore, presents a sustainable development framework for housing.

A SUSTAINABLE DEVELOPMENT FRAMEWORK FOR HOUSING

The relationship between sustainability and housing is in two-ways. Incorporating principles of sustainability into housing development, maintenance and refurbishment will not only make a significant contribution to the achievement of general sustainability objectives, but it will also provide important advances in the quality, durability and cost effec-
There is a need for a change in culture with regard to housing development, which places sustainability in the centre stage. This should include the developers (be they housing associations or private companies), builders and land use planners and also the tenants and owners. Sustainability objectives in housing will be achieved only if they are taken into account at all stages of the design process - from the initial construction - to long term use and the eventual disposal and recycling. The raising of awareness at all stages is important for all those involved.

The sustainability of housing environments has three inter-related dimensions - environmental, socio-cultural and economic, as with sustainable development. The primary concern of sustainable housing, therefore, should be to meet the accommodation needs of the citizens; the housing environment concerned has to be safeguarded from deteriorating to the extent that it diminishes the ability of future generations to meet their housing needs. Furthermore, sustainable housing should not be merely about meeting basic needs, but it should also improve livability and quality of life in terms of the economic, social and cultural aspects. Accordingly, there are many important factors that make housing important for achieving sustainable development (http://www.housingcorp.gov.uk/server/show/nav.1408):

- Housing is a basic human need - its quality, cost and availability are crucial to the quality of life of individuals.
- Well-designed and well-maintained housing helps to support a sense of community, just as run-down neglected housing will tend to erode it.
- The location, planning, layout and design of housing make an important contribution to community spirit and identity, which are significant components of the social dimension of sustainable development.
- There is an inter-relationship between housing, health and well-being, educational access and attainment, and access to employment.
- The position of houses, the materials of which they are made, the uses their occupants make of resources such as energy and water, and the availability of public transport/alternative forms of transport all have major environmental implications.
- Many residents of housing associations suffer from social exclusion and can be benefit dependent. They are a key target group for many government policies including social inclusion, eliminating child poverty, decent homes, job generation and employment addressing fuel poverty, health and education improvement.
- 70 of the 147 national sustainable development indicators, and many of the regional and local indicators, can be linked to housing and community issues.

With these discussions in mind, housing environments can be regarded as “sustainable” if they are planned and designed in such a way that:

- The location of housing should ideally be in close proximity to the residents place of work, services and public transport.
- The layout of the housing development is in compact urban form - providing an open space network, serving a number of inter-related purposes concerning managing pollution, wildlife, energy, water, sewage, and green space.
- Housing development is structured around energy-efficient movement networks in which the level of accessibility is maximized, and travel and car dependency is minimized, and, where necessary, can be achieved by walking, cycling or using public transport, so that travel choice for all groups in society is increased, and all parts of a development are provided with good access to public transport.
- The design of housing is energy efficient; thus, where there is a strong energy strategy, which relates to reducing heat loss, maximizing solar gain and solar energy use, combined heat and power potential, embodied energy.
- The housing area develops a water strategy by relying on end-of-pipe off-site solutions; minimizing consumption; encouraging on-site infiltration and waste treatment.
- The level of pollution and waste is minimized, and where a degree of pollution is unavoidable, the place should as far as possible be self-cleansing.
- The characteristics of vitality, variety and legibility in the housing environment are high in quality in order to give the users / residents a sense of place - with the objective of reducing
any sense of “placelessness”.

- The quality of local environment / life is improved by creating an attractive, safe and well-supervised urban environment with social stability and a sense of community.

Thus, the above listed features can be regarded as the general main features of sustainable housing.

The above paragraphs described how housing can contribute to the achievement of sustainable development objectives. This is a two-way process because the most cost-effective way to develop and maintain a high quality housing stock in the long term is to incorporate principles of sustainability into all parts of the housing development process. Since new buildings comprise only a small fraction of the existing stock, it is also important that refurbishment incorporates sustainability principles.

While planning and designing sustainable housing environments, in order to provide the existing housing areas with a healthy and sustainable future, there is also a need to measure and assess the level of sustainability in those areas so that future planning decisions - such as maintenance, refurbishment, revitalization etc. can be taken accordingly. Thus, considering the main aim of this paper, that is to identify a model for assessing the level of sustainability in housing environments, the following lines will first present detailed information on sustainability indicators, which are essential, to set up a measuring model. The paper will then seek to identify a method to develop and select the sustainable housing indicators, within an indicator framework.

**SUSTAINABILITY INDICATORS: FRAMEWORKS, SELECTION AND MEASUREMENT**

Generally speaking, Adriaanse (1993) defines an indicator as a quantitative model and a form of information that makes a certain phenomenon perceptible that is not immediately detectable. Indicators, therefore, provide a simpler and more readily understandable form of information than complex statistics or complex phenomena. The three main functions of indicators are: quantification, simplification and communication. Indicators also help to follow the change of phenomena in time scale and the development of phenomena in relation to the stated objects. One of the other important functions of an indicator with reference to decision-making is its potential to show the trend, i.e. the course of development, at an early stage. In order to work with indicators, one needs data, which comes from a monitoring process. Therefore, indicators should be objective and the results should be repeatable. In many cases, indicators should also be internationally comparable, although those were mainly used nationally. The main risk with regard to indicators is the concern over simplification and the loss of important information.

Agenda 21, chapter 40 states that: “indicators of sustainable development need to be developed to provide solid bases for decision making at all levels, and to contribute to a self-regulating sustainability of integrated environmental and development systems (CRISP, 2001).”

There are numerous studies on indicators, in the literature, in general, and sustainability indicators in particular. For example, two scholars, Gilbert and Feenstra (1992) have, on the basis of the literature, identified four desirable features of indicators:

- The indicator must be representative of the system chosen and must have a scientific basis.
- Indicators must be quantifiable.
- Part of the cause-effect chain should be clearly represented by the indicator.
- The indicator should offer implications for policy.

According to some other scholars (Atkisson, et al.1997; Maclaren, 1996; Hart, 1999), good sustainability indicators should be relevant, valid, consistent, reliable, comparable, measurable and comprehensive.

A more detailed study is offered by MacLaren (1996) who distinguished urban sustainability indicators from simple environmental, economic, and social indicators by the fact that they do not only integrate, but are also forward looking, distribut-
ity in one urban area may not be appropriate for another city. Thus, in order to be useful, indicators must verify (a) whether sustainability in settlements is improving or deteriorating in relation to certain sustainability criteria or desirable targets, and (b) how these trends are linked to trends in spatial structure, urban organization and lifestyles.

Sustainability indicators in respect of a community are used to give an overall indication of that community's economic, environmental and social conditions in terms of its sustainability - taken as a whole they describe whether these systems are likely to be maintained over the longer term or if they will over time gradually degrade. Since we cannot, at this time, actually assess when a community has become truly "sustainable", sustainability indicators cannot inform us about how far we still have to go, but they can let us know if we are moving in the right direction.

In order to develop effective indicators, which address the issue of sustainability and which improve upon those used in the past, it is important to recognize factors that contribute to successful indicator packages. There are four major components to sustainability indicators that distinguish them from other types of indicators. Sustainability indicators should: highlight linkages; be forward-looking; examine distributional equity; and, be developed with diverse community input (Macleren, 1996; Hart, 1999; Oktay, 2005).

Building upon the definition of an indicator, a sustainability indicator considers measurements and trends that link or combine all three dimensions of a sustainable or healthy community: economic, environmental, and social factors. When developing sustainable development indicators, it is important to address the challenge of fully integrating the social, economic, environmental and institutional aspects of development. In this respect, sustainable development indicators are different from sectoral indicators such as geo-indicators, bio-indicators, social and economic indicators. Sustainable development indicators must be capable of capturing the interrelationships between the social, economic and environmental dimensions of development. This is not an easy task as the interrelationships between the environment and economics, or social change and the environment, have not been fully explored and understood. Social, economic and environmental indicators have mostly been used independently from each other since their conception. The scientific community requires carrying out much more research and work in order to develop indicators that describe the interlinkages between the different dimensions of development.

According to the Planning Authority (1997), sustainability indicators have three central functions: to simplify the main concepts related to sustainable development; to quantify and measure aspects of sustainable development; and, to communicate them to the public and policy makers. Similarly, as Oktay (2005) stated, relevant and measurable indicators can be used to measure the current level of sustainability and at the same time they can give information about how the level of sustainability can be increased in an urban area.

Sustainability indicators are becoming increasingly important as tools for examining sustainable development in urban settlements. Many initiatives have been taken to develop sustainability indicators, and several international organisations have created specific programmes to develop and harmonise urban sustainability indicators. These include the UN Centre for Human Settlements (UNCHS, 1996), Agenda 21 of the United Nations Conference on Environment and Development (UNCED), European Union, the UN Commission on Sustainable Development, the World Bank (1999), the Organisation for Economic Co-operation and Development (OECD, 1993), The European Environment Agency (EEA, 1996) and the World Health Organisation. In the following text, indicators have been grouped in their different categories or frameworks and an attempt has been made to provide a summarised description of each category or framework based on the ISO 14031 terminology.

**INDICATOR FRAMEWORKS AND TYPES OF INDICATORS**

An indicator framework outlines the typology of indicators. There are three different indicator frameworks described by different organisations.

The first one is, as introduced by Organization for Economic Co-operation and Development (OECD), Pressure - State - Response (PSR) model, which provides a classification of indicators of environmental pressures, environmental conditions and societal responses. According to the PSR model, indicators of environmental pressures
describe pressures resulting from human activities, which are exerted on the environment, including natural resources; indicators of environmental conditions relate to the quality of the environment and the quality of the natural resources; indicators of societal responses show the extent to which society responds to environmental concerns (OECD, 1993).

The second indicator framework has been drawn up by UN Commission on Sustainable Development (UNCSD)'s which is named as a Driving Force - State- Response (DSR) framework. The replacement of the term "pressure" in the PSR framework by the term "driving force" was motivated by the desire to include economic, social and institutional aspects of sustainable development. This adjustment was deemed necessary when one shifts from a consideration of environmental indicators to these indicators plus the state of the human subsystem (Gallopín, 1997: 22). The extension of the focus to all aspects of sustainable development (social, economic, environmental and institutional) is argued to be "particularly important for developing countries...for whom an equal balance between the developmental and environmental aspects of sustainable development is important in order to ensure future sustainable growth patterns" (Gallopín, 1997: 49).

Another aspect of the DSR framework, which separates it from its predecessor, is that there is no assumption of causality between indicators in each of the categories. "The term 'driving force' indicates...an impact on sustainable development. This impact can be both positive and negative, which is not the case for the pressure category used by the OECD. Driving force indicators represent human activities, processes and patterns that have an impact on sustainable development" (Mortensen, 1997: 48).

The third framework is the European Environment Agency (EEA)'s Driving Force - Pressure - State - Impact - Response (DPSIR) typology in which the driving force indicators describes social, demographic and economic development in societies and the corresponding changes in life styles, levels of consumption and production patterns. The DPSIR model "...has been adopted as the most appropriate way to structure environmental information by most member states of the European Union..." (European Community, 2000). In this framework:

- Driving forces represent basic sectoral trends in energy generation, transport, industry, agriculture, tourism, etc.
- The word pressure refers to human activities directly affecting the environment such as the production of carbon dioxide.
- The word state refers to observable changes in the environment, such as global warming.
- The word impact represents the effects, which a changed environment has as in the case of e.g. floods or other naturally occurring disasters.
- The word response refers to the response of society in respect of resolving environmental problems by introducing, for example, the concept of energy taxes.

In the context of the DPSIR model, Eurostat focuses on response, driving forces and pressure indicators, whilst state and impact indicators are mainly the domain of the EEA (Hoskara, 2007).

Following the main aim of this paper, the DSR indicator framework will be taken as a basis for grouping the housing indicators in the selection process, since this framework covers all three dimensions of sustainability simultaneously and in a more practical way than the other frameworks. However, it should be kept in mind that, the most comprehensive framework - DPSIR or the other one - PSR may also be preferable if the time allows and if they are found to be more useful for the purpose.

### FORMULATION, SELECTION AND MEASUREMENT OF SUSTAINABILITY INDICATORS

Before selecting the indicators, as community sustainability needs to be defined by the community itself, it is essential that the same community also determines what measures are useful in measuring the progress toward its definition of sustainability. Therefore, broad community participation with representation from diverse groups is necessary to develop good community sustainability indicators.

Because they are multi-sectoral and inter-disciplinary, indicators of sustainability are always produced by relatively large teams of people, whose work is facilitated by a smaller coordinating group. Most often, public involvements is also used to help define a sustainability vision, set goals, and identify...
potential measures. To put it more simply, the community should choose its list of sustainability indicators as it moves towards smart growth. Its list should reflect where the community wishes to go. It should be a participatory process, as detailed in other parts of this paper. The final selection of indicators will depend upon the goals of the community, data accessibility, and resource availability. However, one process that a community might consider in developing its list of sustainability indicators is set out in Figure 1.

For this paper, two approaches by two different authors - Vemuri (1978), which was then later adopted by Rasmussen and Dalsgaard (1994), and Gordon Mitchell et. al (1995) - are adapted together and proposed as a new method for the formulation or selection of sustainability indicators. The first method that was formulated by Vemuri in 1978 and later adopted by Rasmussen and Dalsgaard (1994) helps to provide a context for the indicators with which to gauge success in achieving community sustainability goals. However, only indicators that are directly related to the goal are used. Again, complex issues that combine environmental, economic, and social factors may be missed.

This method starts with the goal of the decision-maker, but for measuring how well this goal is achieved, it is needed to break down the goal into a number of objectives, central to fulfilling the goal. These objectives (B1, B2, ..., in Figure 1) can further be divided into causing factors (C1, C2, ...) and finally into indicators (D1, D2,...), which can be measured and are quantifiable, as shown schematically in Figure 2.

The second and similar method is largely based upon Gordon Mitchell's (1996) work in the United Kingdom. In a broad sense, the community begins with the concept 'sustainability', identifies its component parts (issues), selects indicators to accurately reflect the presence or absence of that dimension, and then evaluates the final indicator set.

After completing the evaluation process of the relevant and good indicators for the community and/or housing area, a testing or it is necessary to determine the measuring method of the selected sustainability indicators.

During this research, many methods of measuring sustainability have been considered. Specialists in the area of sustainable development have developed many different ways in which to test sustainability (Randall, 2004; Cunningham et al. 2004). However, to date, no single method has been accepted, so the only way forward is to keep developing ideas, refining them. Literature review shows that (Randall, 2004; Cunningham et al. 2004; Breheny, 1993), the measuring or testing sustainability is carried out focusing on the comparisons between urban areas or on the same area over different periods of time.

Five categories of methods have been developed to be used in the assessment and analysis of environmental effects and sustainability. These methods are: checklists, scaling and weighting techniques, overlays, matrices, networks. For this paper, the scaling technique was selected for use in measuring sustainability. The scaling of effects addresses issues of magnitude and is based on a numerical system in which the highest number represents a very good effect and the lowest number
represents a very adverse effect. The mid-point would be an average effect, or a neutral one. For example, using a scale of 1 to 5 in a sustainability study, the following definitions could be applied to qualitative assessments of some activity or process:

- 1 - unsustainable in all respects
- 2 - approaching unsustainable conditions
- 3 - partially sustainable
- 4 - sustainable in most aspects
- 5 - highly sustainable

This scaling method can be used alone to determine some composite score for magnitude or it can be combined with a weighting scheme to incorporate considerations of importance or significance. After describing and explaining the necessities of formulating sustainability indicators, their selection and measuring methods for assessing the level of sustainability in general, this paper will now continue to set out a proposal of a model for assessing the level of sustainability in housing areas.

THE MODEL FOR ASSESSING THE LEVEL OF SUSTAINABILITY IN HOUSING ENVIRONMENTS

Based on the relationship between sustainability and housing as discussed previously, in order to test or assess the level of sustainability of housing environments, indicators of sustainable housing need to be determined. In some literature, there are some studies, which introduce housing related indicators in general terms. Some of these indicators taken from the reviewed international and national policy documents are:

- floor area per person; population of urban, formal and informal settlements;
- distance traveled per capita by which mode of transport and intensity of energy use (as introduced by UNCDS, 1996) or;
- availability of dwellings, amenities, size of dwelling, state of repair of dwelling, tenure status, type of accommodation, affordability of housing, amenities in residential areas,
- environmental quality of residential area, public safety,
- subjective evaluation of housing, subjective evaluation of the residential area, subjective safety in the residential area, regional disparities in housing conditions,
- income related inequality of housing conditions, homelessness, poor housing conditions, area used for settlement, energy consumption, preferences related to dwelling, preferences related to residential area (as have been introduced by European System of Social Indicators-ESSI) (Berger-Schmitt, 2001; Berger-Schmitt and Noll, 2000); or
- some others - gathered from other sources - such as satisfaction with housing availability, affordability and standards; accessibility of council housing; urbanized or artificially modeled land (size of artificially modeled area as a percentage of the total municipal area);
- derelict or contaminated land (total square area); intensity of use (number of inhabitants per km2 of the area classified as ‘urbanized land’; new development/new buildings on Greenfield sites and new buildings on contaminated or derelict area (brownfield) compared to total area (%);
- restoration of urban areas (renovation and conversion of derelict buildings - total number, total square area of each floor); redevelopment of derelict areas for new uses, including public open spaces (area in m2); cleansing of contaminated land (area in m2); local mobility and passenger transportation; noise pollution; re-usability and regeneration of derelict or disadvantaged areas;
- avoidance urban sprawl, achieving appropriate urban densities and prioritizing brownfield site over greenfield site development; ensure mixed use of buildings and developments, with a good balance of jobs,
- housing and services giving priority to residential use in city centres;
- ensuring appropriate conservation, renovation and use/re-use of our urban cultural heritage;
- apply requirements for sustainable design and construction and promote high quality architecture and building technologies.

These indicators have multi-dimensional, linking, in other words each of them covers social, economic and environmental dimensions.

In 2005 the EU produced indicators based on its sustainable development strategy. The housing related indicators introduced by the EU are: adequacy of housing conditions or access to
Beser Oktay Vehbi, Ercan Hoskara & Sebnem Oral Hoskara

decent housing conditions living in households considering they suffer from noise and from pollution; energy consumption by sector (includes households and services); land use change by category; built up area as % of total land area; car share of inland passenger transport; access to public transport. Most of the indicators are related to the environmental dimension so the multi-dimensional characteristics of the indicators are missing from this list.

These housing related indicators lists, which have been produced, developed and proposed at international levels by some international organizations (such as Habitat Agenda, the UNCHS Indicators Programme, 1996; CEROI initiative - Cities Environmental Reporting on the Internet; neighborhood sustainability guide book, 1999; Sustainable Seattle, 1995; OECD Urban Indicators, 1997; etc.) might or might not be relevant for all areas - in all countries and/or cities. As Macleren (1996) states, each community should determine its own sustainability definition before determining the most appropriate and relevant sustainability indicators for their community. Thus, for each study area in which the level of sustainability needs to be assessed and measured, it is necessary to develop and select a number of site-specific housing related indicators.

This paper proposes a model for assessing the level of sustainability in housing environments - which also covers a methodology for selecting these site-specific indicators. This model is described in its various stages in the following text and it is also summarized in Table 1. Thus, for the selection of relevant housing indicators, the indicator development process is proposed to make up from the combination of two different methods as stated earlier. One of the methods belongs to Gordon Mitchells (1996) and the second one is Vemuri's method (1978), which was adopted by Rasmussen and Dalsgaard (1994). Based on this adaptation, the housing related indicators selection process for the principal task of measurement and establishing the level of sustainability in housing environments, in this paper, consists of eleven steps (see Table 1):

1. Identification of the community's goal for a sustainable housing environment: As explained before, the best indicators relate to a defined vision or goal, and support us to determine how close we come to meeting that goal.
2. Identification of objectives (components) of the goal: Depending on the defined goal for a specific case area, the objectives are needed to achieve this goal.
3. Determining the causing factors of each objective depending on the characteristics of a specific case study area.
4. Construction of indicators under the determined causing factors. In other words, grouping of all indicators separately under three sub-systems (economic, environmental, and social) according to common issues, i.e. the causing factors.
5. Having the initial indicators list based on goals and objectives. (This list generally consists of indicators, which may still not be relevant for a case study area. In order to understand their relevance the next step should be completed.)
6. Evaluation of initial indicators list in order to find the most relevant indicators for a case study area, using evaluation cards and setting up the final indicator list.
7. Grouping the final indicator list based on the Driving Force - State - Response (DSR) framework / model, in order to classify them according to their impact on the area.
8. Identification of meaning, required data and objectives of the selected indicators.
9. Selecting a method for measuring the indicators (Scaling from 1 to 5 is proposed).
10. Analyzing the natural, built and socio-economic environment of housing areas by

<table>
<thead>
<tr>
<th>HOUSING INDICATOR DEVELOPMENT PROCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>For The Application of the Proposed Model</td>
</tr>
<tr>
<td>Definition of Goal for the Sustainable Housing Environment – I.e. Goal (Determined By Community)</td>
</tr>
<tr>
<td>Objective (Component)/s Of Goal</td>
</tr>
<tr>
<td>Identifying Causing Factors</td>
</tr>
<tr>
<td>Initial Indicators List according to the goal and objectives under Causing Factors</td>
</tr>
<tr>
<td>Evaluation of Indicators for selecting the most relevant indicators and setting up the Final Indicators List</td>
</tr>
<tr>
<td>Grouping the Final Indicators List according to DSR model</td>
</tr>
<tr>
<td>Meaning and Objectives of the selected indicators</td>
</tr>
<tr>
<td>Selecting a Method for Assessing the Indicators</td>
</tr>
<tr>
<td>Completing all Analyses in Natural, Built and Socio-economic Environments of the concerned Housing Area</td>
</tr>
<tr>
<td>Measuring the Selected Indicators through analysis results and Finding out the Level of Sustainability in Housing Area</td>
</tr>
</tbody>
</table>

Table 1.
employing multi-dimensional analyses techniques.

11. Measuring the selected indicators according to analysis results and statistical information (census, etc.) and identifying the level of sustainability in housing areas.

CONCLUDING REMARKS

Housing as a basic human need and housing and/or residential environments as one of the basic elements of the urban pattern play a crucial role in the sustainability of human settlements. Having identified the key issues of sustainable housing - being compact in urban form with an appropriate energy-efficient open space network, having a strong energy and water strategy through which consumption is minimized, heat-loss, levels of pollution and waste are reduced, solar energy is used and any sense of ‘placeless-ness’ is reduced, - this paper has set out a theoretical framework based on the sustainable housing concept. The paper has used this framework to propose a model for assessing the level of sustainability in housing environments. Depending on this aim and the model, a method for developing and selecting site-specific housing related indicators according to different indicator frameworks, are explained.

In setting out to test the applicability of this approach in assessing the sustainability of housing environments in any urban area, it is stated that each case study site needs to have a different set of indicators according to the differences in their geographic, economic, social and environmental structures. In other words, indicators may vary in their relevance according to the local environment and the final purpose of their measurement and monitoring (and the practicality of this measurement). It is also important to select indicators with the participation of and the consultation with the community in order to obtain valid and realistic indicators of their success and sustainability. The indicators selection process should be characterized by loops and feedback between the various people involved (most importantly, by the various project teams and the inhabitants of the study areas).

During the application of the model to a case study area, the community participation process and the availability of data for measuring some of the selected indicators are some of the obstacles that can occur. In respect of the issue of participation, and the fact that this will involve many people from different disciplines and class, the list of the indicators determined by those people cannot all be relevant or acceptable to all. Yet, at the end of the participation process, it should not be forgotten that the indicators should be beneficial and in line with the defined (sustainability) goal.

It is believed that the proposed model can be applicable in any housing area and it can be used as a tool in the decision-making process for the future development of existing housing environments. While doing so, one of the indicator frameworks can be used in the grouping of the housing indicators in the selection process, although for practical purposes, this paper proposes to use the DSR framework.

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INTRODUCTION

Autism Spectrum Disorder (ASD) has recently reached almost epidemic standards, as some researchers suggest, with recent estimates ranging from 0.2% up to 0.67% of the population inflicted with a male to female ratio ranging in estimation from 3:1 up to 4:1, (ADDM, 2007), (Hill & Frith ,2003) and (Fombonne, 2005). Whether this is due to increased awareness, more accurate diagnostic tools, a broadening of the spectrum of symptoms identified as autism, environmental factors such as pollution and pesticide use, increased use of vaccinations, a better understanding of neurological implications or a combination of all these elements- autism is on the increase, (Hill & Frith, 2003) and (Shattuck, 2006). What most theories agree on, however, is that autism is a life-long disorder manifested in impairment in communication, lack of social skills and adherence to routine and repetitive behaviour. New theories also suggest mono-tropism or the lack of joint attention, as an explanation for some autistic behaviour, (Lawson, 2006). In all cases it seems that dealing with the environment, whether social, sensory or physical, is at the core of the issue. As Emmons states "it is time to bring sensory dysfunction into the forefront and begin to look at home and school, learning and behaviour differently- through a sensory lens" (Emmons, 2005: conclusion page).

Despite this significant and increasing occurrence, autism is largely ignored by the special needs services and legislation sector and is strangely absent from building codes and architectural design guidelines. This is despite it emerging in the forefront of concerns for research and changing legislation, (Combating Autism Act, 2006) and (Graham, 2005).

AUTISM & THE BUILT ENVIRONMENT

In order to fully appreciate the role architecture plays in autistic behaviour, one must first clarify some concepts linking the two. Primary among these is the role of the sensory environment, as dictated by architectural design- through choices of geometry, texture, colour, lighting, spatial sequence, functional zoning etc- in autistic perception and behaviour.

Predominant among these concepts is the sensory theory or sensory definition of autism. First developed by Delacato in 1974, it defines autistic behaviour as a group of attempts to rectify various
sensory perception distortions ranging from hypo-sensitivities to hypersensitivities to white noise distortions, in all of the five senses, through "senso-ryisms" (Delacato, 1974). This refers to the classic repetitive behaviour of autism, commonly regarded as the diagnostic symptoms of the disorder: hand-flapping; head-banging; bouncing; hand-biting; body-smelling; finger-tasting etc. Delacato goes on to theorize that by determining the specific senses malfunctioning as well as the type of dysfunction, one may begin to counteract this imbalance. Although the fundamental concept of the role of the sensory environment still stands, this theory has since been developed to include new scientific research (Mottron, 2006), (Bogdashina, 2005), (Emmons, 2005) and (Hill & Frith, 2003).

Possibly the most valuable of these theories are those put forth by autistic spectrum individuals themselves (Lawson, 2006), (Grandin, 1996). Lawson's insight postulates a different, rather than deviant, mindset in autism when dealing with the sensory overload from the physical environment. This mindset is one of "mono-tropism" (single-thinking) or lack of joint attention, which involves the practice of focusing on one issue at a time, disregarding everything else, and plays an important role in the delays manifested in autism (Warreyn, 2005) and (Charman, 2003).

Given that the source of all man-made sensory input is the design of the architectural environment around us, these theories have a significant impact when developing any design model for autism. By manipulating space, or creating multiple sensory opportunities, the architectural design of the environment has been shown to act as a vessel for facilitation, inclusion, accessibility and ultimately usability for the autistic individual in the built environment (Mostafa, 2008a, 2006b, 2006c, and 2003d).

Interestingly, however, when discussing the design of special needs facilities, or even inclusive school environments, autism is minimally represented, at best, in the discussion of the physical criteria required (Architects and Building Branch, 2001a, 1999b, 1992c). The situation is only slightly different in the US, where autism is also rarely taken into consideration when putting forth policies regarding the architectural design and physical nature of buildings (Szold, 2002). On the international level, in response to this situation of exclusion and in an online interview conducted by the researcher, a representative of the International Code Council stated, "I know of no building or accessibility code that incorporates requirements specifically to address (individuals) with autism" (Brown, L., 2003, CBO Codes & Standards Development).

This is not to say that autism is completely absent from policies and strategies, but rather that it is rarely manifested into specific architectural guidelines. Most of the available policies examine the social environment and educational support when discussing issues like inclusion, accessibility and facilitation (Chari, 2006), (Collins, 2006), (Zierhut, 2002), (Hesmondhalgh, Breakey, 2001) and (Jordan, 1997). Autism is also commonly overlapped and confused with similar disorders and challenges, when design guidelines are being set, particularly Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD) (Carbonne, 2003).

When architecture is discussed it is usually in the form of generic procedure, client-architect relationship and generalized strategies (Beaver, 2006), (Humphreys, 2005) and (Myler, 2003). Some research however, has begun to look at the autism-architecture relationship with appropriate complexity and in a dynamic fashion (Mostafa (a) 2008), (Mostafa (b) 2006), (Mostafa (d) 2003).

Given this combination of factors a new approach and strategy needs to be developed. This should be particularly towards developing the scope of services required for life-long support, from education to recreation to housing. It is the objective of this research to present such an approach as applied to housing adaptation for adults living with autism. This will be done using a design model developed specifically for accommodating autistic needs in architectural environments with appropriate theory (Mostafa (a) 2008, Mostafa, (b), 2006). This strategy will be applied through a case study illustrating the architectural design criteria developed by the researcher for a
housing adaptation project for autistic users - the Charis Workhome for Autistic Adults in Rotterdam, the Netherlands.

AUTISM, BUILDING TYPES AND HOUSING

As discussed previously, designing for autism has been generally overlooked. School design and education, naturally, have received the greatest attention. There are also discussions regarding the general importance of the outdoor environments to healing, learning and general well-being, applicable to all users (Hartig & Cooper-Marcus, 2006), (Millet, 2004) and (Crisp, 1998). In this field there is discussion of the specific guidelines for designing outdoor environments for autism (Henry, 2006) and (Hebert, 2003).

Discussions of housing design for autistic users, however, are lacking. Research is seen, for example, to examine the importance of user involvement, but in a generic sense. As Ryhl states in her discussion on general user involvement, “the importance of dialogue between user and practitioner can not be sufficiently emphasized in order to assure housing design of high architectural quality.” (Ryhl, 2004). Although autism could potentially be a component of this dialogue, its extensive scope and specificity of design requires more than a generic recommendation. More applicable tools such as “participatory design” (Lee & Jachna 2004), may allow autistic needs to be better represented in the housing design process. The overwhelming occurrence of autism would still not be represented equally with physical challenges in approaches to accessible and universal design, however.

When considering the residential building type, again social, rather than architectural criteria and conditions are primarily looked at (Laustsen & Linck, 2006), (Preece, 2006) and (Marquette & Miller, 2002). In these cases the residences discussed are primarily custom-built. Mass housing policies are yet to include autism, even within their attempts to be more inclusive, provide equal opportunity and avoid discrimination, as most housing laws now dictate (Milner & Madigan, 2004) and (Hacihsanoglu, 2001). Although covered comprehensively, physical accessibility issues, rather than the more autism appropriate aspects of perception and sensory environment, are the main focus (Imrie, 2005 a, 2004 b), (Iwarsson & Stahl, 2003) and (Kane et al., 2002). Although mental aspects of the housing environment are considered, it is in relationship again to those with physical disabilities, rather then mental and developmental challenges such as autism (Harrison, 2004).

All this is despite the great importance of the home environment to the autistic individual and his/her family. The home is not only a large part of most autistic curriculums’ life skills, but the family unit can be a powerful and irreplaceable tool for development. This unit is his/her life-long support team and his/her bond with them is important. The family environment creates the perfect opportunity for compassionate social skills development. Those with autism have been found to learn better in context rather than abstractly, and the home environment creates numerous opportunities for such learning (Zierhut, 2002).

Given this, in addition to the growing statistical prevalence of autism, it’s exclusion from building policies and inclusion strategies, as well as the confusion surrounding its relationship to concepts such as accessibility and usability, it is important to begin developing an autism specific model for generating architectural housing design guidelines.

Beginning with a case study of the Charis Workhome, it is hoped that a set of design criteria to be included in universal and accessible design approaches to housing may be developed, bringing autism into the group of challenges and difficulties addressed.

CASE STUDY APPLICATION: THE CHARIS WORKHOME FOR AUTISTIC ADULTS, THE NETHERLANDS

Project Outline:
The Charis Work-Home Project was first brought to the researcher in June 2003. It was required to develop a set of design criteria to be used by the local architect to adapt the existing design to facilitate use by a group of autistic adults.

Part of a housing complex, the units to be used as the work-home were to be rented, limiting the intervention possible. The project consisted of 3 adjacent buildings. The two buildings on either side each consisted of 4 apartments. Each apartment had a single bedroom, bathroom, living area and small kitchenette. The central building had a group
living room, group kitchen, laundry room and 4 hobby/activity areas as well as one apartment. This group of buildings was to be designed as a residence for 8 autistic adults and one caregiver or supervisor. The hobby/activity rooms in the centre were intended as vocational workplaces for these users (figs 1-3).

**Sensory Design Model:**

In order to organize the complex relationship between the architectural environment and autistic needs and manifestations, a design matrix was used. This matrix, called the "sensory design model", was first published in 2008 and acts as a catalyst for design guideline generation and regulates the various architectural features and their relevant responses to, and facilitation of, autistic needs (Mostafa (a) 2008), (table 1).

The vertical axis to the far left lists various architectural attributes such as closure, texture, colour, lighting, etc. The horizontal axis at the top presents the senses and their various manifestations in hyper-sensitivity, hypo-sensitivity and distortion. By matching each of these possible sensory manifestations with the architectural attributes, the specific design guidelines were generated. It should be noted that, while possible to completely customize guidelines for an individual user in their home environment, given the group nature of the project, the most common issues, as outlined in the following guidelines, were given priority, in order to benefit the largest number of users.

It should also be noted that other issues such as mono-tropism, vs. poly-tropism were also taken into consideration, particularly when presenting guidelines for the visual quality of spaces.

![Ground Floor Plan](image)

**Table 1. Sensory Design Matrix which acts as a design guideline catalyst, generating architectural recommendations at intersections between architectural attributes (vertical axis) and sensory issues (horizontal axis) in their various manifestations, where appropriate.**
Design Criteria
To create a group of general guidelines responsibly, the most common issues were addressed. Previous research prioritizes these issues as; auditory, visual, tactile, proprioception, smell and taste (Mostafa (a), 2008). Hence an emphasis was to be placed upon the design criteria best serving these, in order, depending on their prevalence.
1) SPATIAL QUALITY

1.1) Acoustical Environment
Possibly the most prevalent problem facing autistic users, environmental acoustics and their auditory impact play an important role in any design consideration for autism (Mostafa (a), 2008), (Mostafa (b), 2006).

Acoustical Treatment Recommendations:

1.1.a. External Walls: The external wall perimeter of the building can be considered as the primary noise filter for the building as a whole. The organization of the buildings of this project, being semi-attached, fortunately reduces exposure to external noise sources. Sound-reducing techniques such as hollow block-work, cavity wall systems, increased cross-section and sound reflection were recommended for external walls particularly in areas adjacent to high noise sources, such as heavy traffic streets or neighbouring public spaces like parks or schools.

1.1.b. Closure and Openings: Having a great impact on noise permeability, external openings in all spaces should be treated. If the space in question is an area requiring high acoustical quality such as a bedroom or speech therapy room, it may be preferable to reduce the openings in number as well as in size. The windows themselves should be double or triple glazed. Sound-traps- louvered fins covering the opening- may also be used to reduce noise permeability. Heavy curtains using fabrics such as velvet or thick gauzy cotton may also be used.

1.1.c. Internal Walls and Ceilings: Internal noise sources, being more controllable, may be dealt with as follows:

- Adjacent noise sources and soundproofing: This deals with sounds permeating internal walls from one space in the building to another. This can be through both walls and floors/ceilings. Spatial organization and zoning also play a role in this, and will be discussed. Internal walls should be treated to decrease permeation, particularly in sound sensitive areas like bedrooms and speech therapy rooms. Any form of acoustical panelling in walls and ceilings putting sound within 125-4000 Hz is acceptable.

1.1.d. Spatial Geometry: This point deals with the scale, proportion and general form of the space and their relationship to the acoustics. Large spaces, particularly when combined with non-sound absorbent finishing materials, may create echoes distracting to the autistic individual. Proportion is particularly important in this issue where very high spaces, like stairwells, and very long spaces, like corridors.

With regards to the design at hand, the spaces may be analyzed according to these issues. The bedrooms are of an intimate scale that is preferable for autistic users. The ground floor corridor, on the other hand seems to be disproportionately long, which may cause some issues for the adjacent users, as well as those entering the building. The echoes caused, particularly at the beginning of the "coming home" routine may disrupt all hypersensitive users on a daily basis. The stairwells seem to be minimally contained, minimizing problems with echo.

1.1.e. General Finishing Materials: As a general rule non-reflective sound-absorbent materials are preferable when designing autistic environments. If a user is hypo-sensitive it is always easier to add sound sources rather than try to remove those causing distraction. Natural materials, such as soft

Bathrooms and kitchens are a particularly concerning noise source due to the sound of water rushing through their plumbing systems and sound insulation of plumbing and their adjacent walls is recommended. HVAC systems should also be sufficiently soundproofed.

- Internal noise sources and Echo-proofing: This deals with the noise generated from inside the space and reverberating around it. Non-reflective sound absorbent materials for floor, wall and ceiling are recommended. Floating floor systems, in addition to allowing easy access to various electrical phone and network systems making furnishing more flexible, when used in combination with sound insulation materials, greatly improve the acoustical quality of critical spaces. When using highly reflective materials like ceramic tiling in bathrooms and kitchens, areas should be limited by application only to necessary splash height. Soft water proof vinyl based materials, such as Novilon, may also be used.

...
woods like pine, natural sisal, or certain sound absorbent vinyls are recommended. Walls can be inexpensively finished with non-glossy textured paints or, if users are hypo-textural, smooth sound absorbent wallpaper. A good natural material, which also provides excellent sound and echo proofing as well as tactile stimulation, is cork boarding.

1.2) Tactile Environment: Texture and Closure:
When discussing the tactile environment and its architectural manifestations, two points come to mind: texture and closure. With the hyper-textural user, smooth, soft materials should be used while the hypo-textural user needs stimulation through rough textures. Again natural materials provide a positive balance, with areas created customized to each user within the building. It may be preferable to include a sensory area or room for provision of any lacking sensory stimulation. Each individual can use this space to provide his supplement to his "sensory diet" (Anderson, 1998).

Closure also plays a role in the tactile character of a space. Hypo-tactile autistic users seem to prefer small intimate spaces, particularly when conducting a calm activity like sleep. Possibly the most popular application of this is Temple Grandin's squeeze-machine, a chair which closes on its user to provide stimulation (Grandin, 1996, p 64). Users also seem to prefer single beds placed against one wall, or tent-like structure. This does not mean that all spaces should be small and highly enclosed. Functional requirements dictate larger areas for group activities. In this case, "escape spaces" can be useful (Mostafa (a) 2008).

1.3) Illumination
Fluorescent lighting should be avoided. Both the visual issue of flickering and the auditory issue of the low humming sound it emits, create a disturbing luminous environment for autistic users. Regular filament or soft-tone lights can be used. A dimmer switch is also an effective means of controlling light intensity for "sensory diet" reasons, as well as to provide for varying sensitivities of users. Natural light is preferable, but should be utilized in an indirect fashion to reduce distractibility.

1.4) Colour and Pattern:
A highly effective tool for mood and atmosphere, colour can have great impact in autistic design. Individual preferences however play a large role. It seems that some visually hypersensitive individuals may be discriminatory in their sensitivity across the light spectrum. There seems to be a consensus among teachers and therapists working with autism that use of pale, light, neutral colours seem to be preferable. Whites, off-whites, and pale pink tones are among the most popular choices. Again colour stimulation can be added where and when appropriate.

Patterns also should be kept to a minimum. For the hyper-visual they are an unbearable distraction. For the hypo-visual they create a distracting opportunity for self-stimulation by "tracking". Like other issues, such tracking can be allowed in a controlled area like an escape space or sensory room to be used when necessary.

2) SPATIAL ORGANIZATION

2.1) Sequencing and Routine
One of the more common issues in autism is their adherence to routine (Greaves et al, 2006). Bordering on the obsessive compulsive, this issue may be a handicap or an advantage, depending on the design of the building in use. Optimally, each space should contain one defined activity, avoiding multi-functional and ambiguous areas. These spaces can then be designed to be purely conducive of that one activity. The spaces should then be organized in a sequential manner, reflective of the daily routine of the users. This concept can affect the zoning and functional organization of the building.

2.2) Sensory Stimulus Zones
This is the label given by the researcher to areas of high stimulation, most commonly the bathroom and kitchen in residential buildings, and their position, within the above mentioned sequence, can be of great importance. When found along a major circulation path, these zones may cause distraction and diversion from the routine at hand. This applies to both the hypo and hypersensitive. If an individual is hyposensitive he/she may be distracted by the stimulatory opportunity. If the individual is hypersensitive he/she may be over-stimulated as the routine may halt altogether.

Adjacency is also a factor to be taken into consideration when organizing and zoning functions.
Placing high stimulus areas next to “quiet” zones will be distracting and in-conducive.

2.3) Boundaries and Compartmentalization
These tools may help implement the above criteria of routine and sequence and sensory stimulus zone management. When activities are clearly defined and separated, an autistic user is more likely to be able to focus and perform. A good example of this is the group living area where various activities may be taking place at once. By organizing these activities so that each has a clearly physically and visually defined boundary, more focus is achieved than with an ambiguous space (Mostafa (a), 2008).

2.4) Furniture Distribution
This plays an important role in achieving spatial definition in group spaces. Grouping may help create subtle physical and behavioural boundaries for each activity as well as encourage certain desirable behaviour. Circular or "conversation" type arrangements in group areas may help encourage interaction and create an opportunity for social skill development.

If within these group areas other activities like reading, computers or quiet study may be available, compartmentalization would be necessary. In this case, a "workstation" cubicle could be set up partially partitioned off from the group area.

With respect to individual spaces, like bedrooms and bathrooms, other aspects need to be taken into consideration. It seems that autistic users prefer small bedrooms with a single bed against one of the walls (Mostafa, (d), 2003, p 204). In extreme sensitivity issues, this area may even be designed as a sort of alcove, providing tactile closure, strong visual boundaries as well as acoustical limitation. No other activities like studying, working or eating should be combined in this area.

Storage should also be available in a well-organized and accessible fashion. Similar compartmentalization is necessary to promote good life-skills. There should be accommodations for the storage of each clothing and equipment category separately. It is best to also have these organized according to the routine or order they are to be used. This will capitalize on the adherence to routine to help promote essential life skills.

The same activity definition is necessary in bathrooms. Many have found that Jacuzzis and power-showers are very enjoyable for hypo-tactile sensitive autistics and use them for stimulation. These should not, however, be placed in the bathroom proper. Confusion of function would occur, where one space- the bathroom- should be purely functional, while the other- the Jacuzzi- can be used for self-stimulation.

2.5) Navigation and Wayfinding
An essential part of any disability design criteria, navigation and way-finding, are important skills that must be facilitated for the autistic user. A skill often hindered when cognitive abilities are challenged, this must be taken into consideration (Salmi et al, 2004). Clarity and visual cues are important tools to this end. Circulation patterns should be straightforward and well coordinated with the sensory stimulus zones throughout the building. It should be noted that since communication is one of the major issues in autism, signage should use visual abstractions like pictures and symbols.

3) SPATIAL ORIENTATION

3.1) Climatic Issues
This point involves the interaction of the building with its natural surroundings. How a room is oriented will influence its physical characteristics. A north-facing room will be colder than a southeast facing room, for example. How this manifests itself in autistic design depends however on each user’s sensitivities and nature. A hyperactive individual may require a cooler environment than a less active or sedentary one. Orientation can also influence natural ventilation in the building. Hypo-tactile users have been found to enjoy breezy areas as a form of tactile stimulation. For hyper-olfactory sensitive users ventilation is essential as it helps naturally flush out any disturbing and uncomfortable odours.

3.2) Natural Lighting, Visual Accessibility and Views
Natural approaches in many issues are found to be more successful. Lighting is no exception. The hyper-visual users however need to be taken into consideration before opening all the walls to wash the space with natural light. Just as a window will let light in it also provides visual accessibility to the outside. In areas where focus and attention are important, like a work space or study, such views may be distracting. When serenity and calmness is the objective, such views, if pleasant, may be calming.
to the hypo visual individual. It is recommended that clear-story or indirect natural lighting be used in general, with views accessed where permissible.

4) SPATIAL INTEGRATION: LANDSCAPING

Nature, being a strong and useful tool with autism, must be incorporated into any autistic project through landscaping. The therapeutic effects of nature are well documented (Crisp, 1998) and (Hartig & Cooper-Marcus, 2006). The outdoor landscape of the building therefore can provide the following important aspects for the autistic user.

4.1) As a Sensory Curriculum

As mentioned previously, it is essential that the daily "sensory diet" of any autistic individual be balanced. A garden or natural landscaped area is optimum for such use. By making available a wide variety of sensory input, landscaping can easily customize itself to any "dietary" needs. By providing elements like water, rocks, gravel, sand, grass, herbs and flowers again arranged in defined yet free-form organic organizations, each user can create his own "sensory balancing" experience. Research supports the use of outdoor physical activity as a superior form of sensory regulation and adverse behaviour reduction in individuals with autism. (Cuvo et al, 2001).

4.2) Dynamics

With this type of approach it is important that all the elements are interactive and dynamic and rather than static. Studies show that children learn more from the sensory experience of play when they have a role in its initiation as well as process. With this in mind, various landscape elements can be made dynamic through design to allow such interaction. Water may be channelled using rocks, levers and adjustable levels. Combining this water experience with elements like sand, gravel and stone may allow the creation of different textures. Seating areas may be non-fixed and modular, allowing adjustability to suit comfort and need. Trees may be placed to allow areas of privacy. Elements like hammocks, trampolines and hot-tubs are good additions, weather permitting.

4.3) Gardening

As mentioned above, gardening and nature seem to have their own therapeutic powers. Some attribute this, particularly with special needs individ-

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incorporated into design audits for existing buildings as well as those used to evaluate future designs.

It is hoped that this paper will be a starting point for the inclusion of this misunderstood and under-represented challenge in the most basic of human requirements- the home.

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ARCHITECTS’ DESIGN OPTIONS IN SELF BUILT HOUSES: Lessons from Bangladesh

Tareef Hayat Khan, Jia Beisi & Tapan Kumar Dhar

Abstract
The paper tries to compare the qualitative difference between professional and pragmatic design solutions in self-built houses. Self-built houses are defined here as permanently constructed houses in urban context, generally used as the primary shelter of the users belonging to middle income group, and most likely to be constructed under own informal management and own investment. The study starts with the question why pragmatic solutions seem to be more effective than professional decisions in self-built houses, even though state regulations try to engage architects in housing decisions. This study adopts ethnographic method to find the implicit reasons behind pragmatic decisions during initial as well as different stages of transformations in the houses, and suggests how professional decisions might become more effective when it is molded with the subjective values of users. It also suggests that knowing these values can be one basic way to bring architects closer to these users, and let architects play social as well as professional role in a field which has not been explored much by architectural practitioners throughout architectural history.

Keywords: Architects, Self-Built Houses, Transformation, Ethnography, Bangladesh.

INTRODUCTION

It has been widely recognized that institutional knowledge trains an architect to deliver the best possible design decisions to meet particular set of requirements of the users. However, even if it is agreed that every architect is equipped with a minimum level of this professional quality, empirical evidences show that attaining only that quality is not enough for architects to be effectively engaged especially in self-built houses (sbh) inside the cities of Bangladesh.

In Bangladesh, the state has made it mandatory for users to seek professional architect’s involvement during the initial layout of a house. The objective is obviously to build a disciplined built environment that can ensure maximum benefit to maximum citizens. However in sbh, professional decisions are often ignored in reality even if architects are hired for it. More significantly it implies that architects’ decisions exist only on paper. Moreover, during the transformations of the houses resulting from various needs of the users, architects are seldom hired for such decisions. It seems that pragmatic decisions are widely valued more than professional decisions of architects. Here, the term pragmatic is not necessarily in absolute opposition to professional ones, but only aims to distinguish between the sources of the decisions, and the term professional decision essentially means paid ones. This study searches for the reasons why users’ pragmatic decisions often overrule professional ones. It subsequently tries to suggest ways so that architects can be effectively engaged inside sbh, which remains a potential vast field for them.

THEORETICAL BACKGROUND: INEFFECTIVENESS OF ARCHITECTS IN SBH

There are apparently two major possibilities for architects to get professionally involved in sbh. Either it can be due to the state’s regulations, which is a top-down approach, or it can be due to the increasing popularity of the architect’s profession on commercial commodity from its outset.

1 sbh are operationally defined as permanently constructed houses in urban context, generally used as a primary shelter and most likely to be constructed under own informal management and own investment, and are least likely to become commercial commodity from its outset.

2 The term ‘user’ represents the ‘owner’ in this paper. Tenants, who are also users, usually do not have any control in housing decisions in these sbh.
their own right, which can be regarded as a bottom-up approach. In the urban contexts of Bangladesh, the existence of this top-down approach makes sure that each user require an architect’s signature, hence a professional decision, to get the permission to commence construction. Thus architects, who historically played major roles mostly in monumental buildings and not much in residential ones, are officially involved in sbh.

However, while Rudofsky (1987) points out that sbh indeed might not always depend on architects for every housing decision, Turner (1972) emphasized that even though architects are needed, they have to respect the users’ decisions. In situations where sbh is limited to self-help houses for upgrading poor people from squatters to permanent settlements, for example in the favelas in Brazil, we see tremendous change of vision from architects while contributing their professional knowledge to these self-help houses, where they are able to make decisions that are widely accepted by users (Neuwirth 2000). The point to note, however, is that for these situations, we need architects with dedication to humanitarian values who are ready to sacrifice part of their professional life for the sake of these.

Smith (2008) states that architects may try to educate the users as any smart professional would like to do, but that is quite contrary to Turner (1972)’s notion that asks for architects themselves to be re-educated at least while being professionally involved in sbh. Stairs (2007) is afraid that this might be one reason that hinders the bottom-up approach of architects being more involved in sbh, as well as it weakens the top-down approach by the state. In other word, architects prove to be ineffective even though they are officially involved and have a potential field to practice.

One strong reason, as Certeau (1984) describes, might be that as an extension of social science, architectural profession involves human decisions which are more subjective. Thus an architect trained with the objectivity of problem solving skills might be in danger of missing out that point. Moreover, designing for shared needs involving groups (for example office, institution, hospitals, hotels) are comparatively less subjective rather than designing for individual needs (Beckhard 1969). Thus, though much smaller in scale, decision making in sbh remains one of the most challenging task for architects, only because there is a larger rate of non-acceptance. Moore (1991) suggests that though outcomes might appear ‘polemic’, ethno-graphic studies can be one effective way to render proper respect to these individual subjective values and help architects in making their professional decisions effectively.

**CONTEXT OF THE STUDY: SBH IN CITIES IN BANGLADESH**

sbh in the major cities in Bangladesh are chosen as the context of this study. sbh constitutes the bulk of urban built environment in these cities as in most cities around the world (Rapoport 1969). The middle income people³ inhabits in these houses. Though they need to hire a professional to get the initial permission to build, they usually seek to keep that fee to a barest minimum. For the reason of low affluence, there appears one more significant aspect in these houses. It is that they are more likely to be constructed in phases i.e. whenever fund allows. As a result, in most cases end up far away from the original layout as requirements continues to change along the live hood of the users. These incremental phases have been chosen as the point of references of our study, and define them as ‘transformation’. For the study, transformation is defined as change in layout by construction or demolition of structural elements or partition walls. The study looks for the nature of involvement of architects during the initial layout as well as during transformations.

**METHODOLOGY**

The study revolved around a question: ‘how professional decisions can become effective to the users in sbh?’ The study depended on ‘grounded’ findings, which is typical in qualitative studies (Ely 1997). 66 houses were chosen from the major cities of the country. Theoretical sampling method

³ Survey finds the average per capita household income of the samples is USD 4200. With average 3 members in the family, that gives an average per capita income of USD 1400. Considering Per capita income as USD 1389 (http://en.wikipedia.org/wiki/Economy_of_Bangladesh, accessed on Aug 14, 2009), these users therefore belong to Middle Income Group.
was used to select these samples, where the selection criteria develops during the selection of first few samples until a saturation point of the list of criteria is reached. Katz (1988) states that this method is useful to facilitate the development of theory with less effort. The final set of criteria for the sample required a house to be minimum two storeys high and having at least two phases of transformation after initial construction. The initial layouts and each consequent transformation in the houses were documented in the form of floor plans. In case of the initial layout differing from the one provided by architect, the reasons were noted. Any further transformations that did not have any professional help were also documented. The reasons for such actions were searched. This particular part was the most significant part of the research. 'Informal' and prolong 'open-ended' interviews were conducted. In most cases, not once but several interview sessions were arranged in order to refine down the subjective nature of the query.

In the next step of the research, initial layouts or transformation incidents which have not followed any professional decision, were isolated and given to professional architects who were asked to give their decisions. 20 such incidents were chosen randomly. After getting professional decisions from architects, who were also engaged randomly, they were again taken back to the users for their further comments, which were readily documented as well. Through comparative analysis, a set of explicit themes were generated. These themes showed only those physical patterns developed by pragmatic decisions which are significantly different from those by professional decisions. For a better understanding, these explicit themes were grouped under three architectural domains namely 'layout', 'indoor-outdoor relation', and 'elevation / 3D'.

It was followed by the more challenging task of finding a corresponding set of implicit themes that can explain the subjective values responsible for these explicit themes. Triangulation method, which is regarded as an effective method for qualitative study (Fetterman 1989), helped emerge several lesser themes, which were further grouped into four larger themes. As a conclusion of this particular study, these larger themes are expected to act as a set of knowledge base that might bridge the gap between pragmatic and professional decisions.

In this study, only 'fresh' architects were chosen, operationally defined as those who have experience as practitioner for five years or less. Empirical evidence shows that these architects get more such professional works since they are smaller in scale and less demanding, while more experienced architects are more likely to depend on bigger scale projects and less on these houses.

RESULTS AND ANALYSIS

The two plans for each transformation action representing the pragmatic and the professional decision, are shown side by side along with their vignettes that gives a qualitative details of the actual event which Geertz (1988) defines as ‘thick’ description.

![Figure 1. Location of one case and its Initial construction (Banglapedia 2006)](image-url)
**Figure 2. Phases of transformation with pragmatic and professional solutions - Source Author**
Thick description of vignettes
The example highlighted in this study is inside Khulna City corporation (KCC 2009) (Fig. 1b) which is located at the North of Khulna District (Fig. 1a). The user Mr. Motiur's house is located in Farazipara (Fig. 1c), one of the several cases from this neighborhood consisting of sbh. The initial construction of the building (Fig. 1d) is taken as the starting point. Subsequent transformations are recorded and showed in Fig 2. The vignettes are written alongside the phases. In Fig 1, phase 2, the first pragmatic transformation is shown, and then compared with professional solutions afterwards.

Theme Analysis: Explicit
After comparing similar sets of solutions from the sample, the following themes emerged which showed only such explicit physical patterns developing from pragmatic decisions those are significantly different from those from professional decisions. They are categorized under the three architectural domains and are as follows:

1. **Layout:**
The transformed layouts do not consider hierarchy of privacy.
They do not follow basic concepts of zoning of similar space usages. The circulation spaces do not possess clarity in space distribution.

2. **Indoor-Outdoor relationship:**
The solutions do not have geometrical perfection. The solutions are based on practical situations such as security, maintenance purpose etc.

3. **Elevation / 3D:**
The three dimensional façade treatments are not considered as primary requirement. Elevation treatment corresponds to measures taken to fight security (such as burglary etc.).

Theme Analysis: Implicit
At this particular point, this study searched for implicit themes that lead such discrepancy between the two sets of decisions. They are as follows:

1. **Users expect family values to be respected even if perfection in design needs to be compromised**
There seems to be an invisible tussle between the professional decision and pragmatic decision when family values are at stake. From the vignettes, it is already clear that there are a lot of stories behind each decision, though only one house is described, and has been done so in concise form. The events in life appears to have enormous value for each decision.
For example, Bithi's room probably can never be altered as she has a lot of memories there (phase 5). So even though the proposed new look living-dining-kitchen combination may work well, it cannot be accepted because Bithi's room loses its existence. This is just one of the numerous incidents where pragmatic decisions overrule apparently better quality professional decisions when family values are at stake. Marcus (1995) describes this attitude it as one's strive for restoring one's self, where memories play significant role. Thus any decision, even if it possesses rational quality may not be welcomed by users.

2. **User's experience and authority dominates decisions**
There are situations where users are reluctant to accept the flaws of their decisions. Though it is sometimes important for the professional architects to have the skill to convince users about the rationalities or advantages of their design, it still seems very much unlikely that the users will accept the professional decision if it in some way leaves them feel disrespected. Habraken (1998) describes it as a practice of territorial control, where anyone within one's own designated territory wants to show one's power, regardless of its lack of quality measured from a bigger perspective. Here the house is the user's territory, and their experience is their power, and it seems to be very important to show significant respect to their decisions during professional consultancy, unless of course some blunder is at stake.
For example, we can take a look at the slanted wall at the West continues in phase 2. Though it is obvious that furniture arrangement is much easier in rectilinear shape, however, the fact that his experience leaves him to decide that the curvilinear wall would apparently waste minimum of land makes him convinced that it would be the smartest possible solution.

3. **Costing and ability to self-manage domi-
nates over design clarity
There can be numerous solutions for a given situation. Some of them are acceptable, others might not be. However, to these users, affluence often becomes the ultimate decider in most of the cases. Construction works involves significant amount of money, and if there is not enough money at a particular moment, even the best ever solution will not be implemented. In different phases in this example, we find that the available fund at hand determines the amount and the quality of the work (phase 4).

Much concern was also on the issue of minimizing construction hazards, and that was reflected on the transformed layout. Actually, this is the significance of self-management of these users. They may not have the money to build the whole building at one stretch, and with the management at their hand they can control the progress of the construction so that the cost does not become burden at any stage of their life. There are several incidents when long term solutions with future vision were made by architects, but users were not convinced only because simply they did not have enough money at that time.

4. Notions in architecture are often not applicable in reality especially in sbh
It has been found that some of the very frequently used notions in academics often mean very little in reality. Let us pick some of them such as privacy, hierarchy of space, zoning, efficient circulation, indoor-outdoor relationship etc. Experience shows that the way the architects are trained to solve a particular issue in an apparently best possible way may not necessarily be the only way to users in sbh.

For example, architects tend to give much priority in privacy of individuals, which were not given much importance in real life situation found in this study. The reasons of course vary, but it mainly depends on the values related with inter-member relationship developed inside a family. Though we must argue that even those values change or develop while the family grows, however, the point is to understand what particular value is important at a given time. In this example, the daughter did not mind if her parents’ room is approached through her room (phase 3). Thus the hierarchy may not be ideal, but still acceptable at least at the stage when the daughter is still young. The same applies to circulation problems and zonings in phase 4, where the elder son’s room is approached through the parents’ room or the sister’s room. The elder brother at this particular point of time probably appeared to be much considerate about his privacy, which of course changed after his marriage when he demanded more privacy.

The indoor-outdoor relationship is one aspect architects are considerably trained. It might be one significant factor in designing public spaces, but obviously carries less significance in sbh. The apparently neglected courtyard at phase 2, or the oblivious terrace at phase 5 reflects such incidents.

Three dimensional massing at the front elevation has often been treated as a signature of excellence for professional architects. Though there is no doubt that aesthetic betterment can still be acceptable even in sbh, however, in terms of priority it comes much later than the other issues such as cost, security, family values, territorial control etc. to name a few. In this example the austere simplicity of the front façade all through the life of the house reflects such notions.

DISCUSSION

There can be several other implicit themes depending on how deeply the vignettes are analyzed, or how prolonged the involvement of the researcher is. However, those mentioned in this study appear to be the most evident ones as far as dispute between pragmatic and professional decisions is concerned. In fact, their relevance to researchers from other social fields shows that these are not new issues from the perspective of social science, but apparently professional decisions by architects involved in sbh might be missing them.

This study suggests that architects practicing inside sbh should respond to local values of individuals and communities by showing more flexibility while making professional decisions. It also tries to link the lack of flexibility with the younger architects who possibly have less experience about those values, though a definite conclusion is not drawn. As long as flexibility refers to a professional quality
that helps architects to perceive a particular professional decision as a function of subjective values of family life at a given time, the gap between pragmatic and professional decisions would be gradually reduced.

An analogy below (fig.2) can be helpful here which shows six squares ranging from a blurred to a perfect one. An architect might like to choose 'f' to define a square, but with value added subjectivity of family life at a given time at stake might lead users to select 'e', 'd', or even 'c' as a square. It is the flexibility responded to social responsibility that will draw the professional decision close to pragmatic decisions.

Obviously, architects should be aware of the cumulative effects of too many pragmatic decisions, particularly in a dense urban fabric that can jeopardize the state's original aim to create a disciplined built environment, and hence not act passively whichever a single user desires in order to get more jobs or larger popularity. The challenge of the architects thus remains to be the maintaining an ever-changing balance between their social responsibility and professionalism.

**CONCLUSION**

From this study it is found that adjusting to such an ever-changing level of flexibility, architects can potentiality become widely acceptable practitioners inside sbh, contributing to both the society and the state without compromising professional commitments. However, future studies might help to find out the need of state's responsibility that can bind users to architects thus making them indispensable.

Moreover, another limitation of this study is that it only highlights how professional decisions can move closer to pragmatic ones. Similar studies to find out whether the pragmatic decisions need to move closer to the professional ones can be interesting too. Probably that might complement this study, with a possible situation where flexibility from both sides might together contribute to a healthy professional relationship between architects and users in sbh.

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INTRODUCTION
It is generally believed that although Postmodernism may have produced a richer and more varied architectural scene, in most instances this has turned out to be little more than historicist and eclectic scenography. Postmodernism seems to have replaced the three-dimensional spatiality of Modern architecture with two-dimensional imagery and decoration, including the use of sculptural forms, ornamentation, decoration, trimmings, etc. These physical characteristics attempt to reflect conceptual meanings and include the use of such techniques as pluralism, irony, paradox and contextualism.

In fact, throughout history, decoration has been an important way of creating meaning and communication through image, and is not solely confined to Postmodern architecture. Robert Venturi, in his landmark Complexity and Contradiction in Architecture (1966) stresses the importance of buildings communicating a meaning to the public, which in turn necessitates non-functional elements. He proposes that ornamental and decorative elements "accommodate existing needs for variety and communication." Similarly, in Learning from Las Vegas - The Forgotten Symbolism of Architectural Form (1972), Venturi, Steven Izenour and Denise Scott-Brown concentrate on the representative role of architecture and stress the relation of representational elements with form, structure and program. They indicate how façades have been transformed into a mere décor and introduce two concepts: the "duck" and the "decorated shed." In a "duck," the overall symbolic form distorts the architectural systems of space, structure and program. In a "decorated shed," the architectural systems of space and structure are directly at...
the service of the program, and ornament is applied independently of them. In other words, the duck is the spatial building that is a symbol and the decorated shed is the conventional shelter that applies symbols. The decorated shed was designed to overthrow the most cherished beliefs and rituals of Modern architecture: expression through form was to be replaced by old-fashioned applied ornament, by the ugly and the ordinary. In the words of Davies (2004), the emphasis was on decoration rather than the shed. Architecture in such a landscape becomes symbol in space rather than form in space (Venturi et al, 1972).

In the work discussed below, the emphasis is on a similar example from a district called Keçiören, in the northern part of Ankara, Turkey. Unlike Las Vegas, it is not a strip but an area heavily built-up with apartment housing, which has been experiencing Postmodernism forced onto the district by the request of the local municipality since the 1990s. Venturi et al (1972) would describe the situation as a kind of pure ‘scenography’ juxtaposed upon real buildings. The architecture of Keçiören is a ‘false appearance’ that might even be called ‘kitsch.’

THE POSTMODERN CONDITION OF THE DISTRICT OF KEÇİOREN

After 1994, when a nationalist political party won the local government elections of Keçiören, changes started to appear and the district began to transform and have a different identity, becoming unlike the rest of Ankara. Before the 1950s, the district, although close to the center of Ankara, was quite rural and was famous for its vineyards and orchards that yielded delicious grapes and pears. The erosion of this identity began in the 1950s when internal immigration within Turkey led to large numbers of rural dwellers moving into Ankara. The construction of squatter housing emerged and began to dominate the development process of the district (Fig. 1). After the 1990s, this trend shifted towards image-production and architecture was used as a medium for representing the municipality’s political ideology by means of ornamental decoration used on the façades of the many apartment buildings being constructed. This effort was carried out in order to rehabilitate the squatter zone, which succeeded, but in the process another set of problems emerged.

The local political administration (the municipality), which was responsible for the establishment of the new ideology, was influential in the decision to create a different environment. The most important activity in this vein was to take control of the housing developments of the district. The administration not only created new regulations for controlling the façades of the new apartment housing, but also demanded control of the existing apartment housing, in order to get rid of ‘ugly looking’ buildings (in the words of the municipality). With these pre-determined regulations, the politicians of the municipality, as they wish, were able to check all projects and enforce alterations using Ottoman, Seljuk and/or Islamic elements on building façades. In the process, architectural styles have been imported and consumed as the indicator of this new ideology. The slogan used was “a new district and a new people.”

Small colorful mosaic pieces were usually the basic elements of decoration. However, not only have the flat areas been decorated, but also architectural elements from traditional Turkish architecture (like projections, buttresses, arched windows,
long eaves, wooden frames, window lattices, frontals, etc.), have been used. In some cases, unconscious applications of an eclectic manner might be carried out, such as a Greek figure or classical columns. The appearance on reinforced-concrete structures of arched windows, wrongly-scaled columns, and long eaves supported with tiny bits of wooden pieces are all indicators of the conflict in architectural signs happening in Keçiören (Fig. 2).

Besides the apartment buildings of Keçiören, other postmodern architectural manifestations that have allowed the municipality to advertise their ideology have appeared in and around the municipality building itself, on the belief that the municipality building acts like an entrance gate to the Keçiören district. On the basis of a synthesis of the cultural ideology of Turkey and Islam, the large square in front of the municipality building has been decorated with monuments, statues, a large waterfall and a concrete replica of Esztergom Castle in Hungary (Fig. 3). Simulacrum, kitsch or “hyper-reality” - falsities that humans create and attempt to sell as realities (Pinarevli, 2005) - are labels that begin to explain this architecture. As Eco (1986) describes our experience of such an environment, “we allow our minds to wonder into fake worlds and accept these falsities as being real.”

While the populist actions of the Keçiören Municipality has not met any reaction from its local residents, there does not seem to be any research asking the opinions of the local residents whether or not they approve of the process or resist in accommodating to such a kinds of decorated sheds. This work aims to ask the opinions of the local residents in order to learn whether they prefer to live in this environment or one that consists of ‘high style architecture’ designed by architects.

**CASE STUDY AND RESEARCH CONSIDERATIONS**

The current study aims to contribute to existing architectural knowledge by exploring the effect of façade complexity level based on judgments of...
preference and complexity. While in some studies pleasantness was found to have a positive linear relationship with complexity (e.g. Kaplan et al., 1972; Devlin & Nasar, 1989; Nasar, 1983, 1984), in others, an inverted U-shaped relationship was found, indicating that pleasantness occurs at intermediate degrees of complexity, decreasing to unpleasantness at the high and low extremes of complexity (e.g. Wohlwill, 1975; Berlyne, 1974, 1977; Imamoglu, 2000). In the current study it was expected that a U-shaped relationship between preference and complexity would be obtained. The same relationship is called inverted U-shaped by Berlyne (1974) and Imamoglu (2000), since high bipolar items represent a positive preference. However, since the order in this study is just the opposite, the terminology "U-shaped" will be used.

Conversely, perceived complexity and perceived impressiveness have a linear relationship - the former increases and the latter decreases as the complexity level changes. A more complex object contains more units of new information (also known as novelty, originality and dissimilarity), and this information is believed to have an impression on the perceiver. In the literature on this topic, impressiveness and preference have opposite meanings. However, the meaning of impressiveness used in this article is equal to an initial image (sensation), i.e. first impressions (as in Baskaya et al, 2006) - the mental picture that immediately forms after exposure to an architectural object and/or space.

Above all, the responses given about the façades were expected to differ depending on age, so the opinions of younger (18-20 years of age) and older individuals (30-45 years of age) were studied. Compared with older respondents, younger respondents were expected to give more favorable ratings to the physical qualities of the spaces. This hypothesis was generated from several studies, including Holbrook and Schindler (1994), who found that age played an important role in the perception of space and aesthetic preference of retail environments. A study by Sinha and Nayyar (2000) has shown that older people are psychologically negatively-affected by high-density conditions. Similarly, Joyce and Lambert (1996) have shown that younger consumers generally feel more positive about a store's image, and that this is an important component in a consumer's choice of store and use of a store environment when compared with older consumers. Yildirim and Akalin (2009) have shown the user satisfaction concerning curved areas in the main living rooms of apartment housing, with older respondents giving less favorable ratings than younger respondents.

**METHOD**

**Environmental Setting**

A total of seven mid-rise apartment buildings from different locations in Keçiören built by speculative developers after the year 2000 were selected as postmodern consumer examples. These buildings were selected because they were all similar in size and height and, most importantly, their decorations and ornaments represented a maximum complexity level in the study. Based on their photographs, each apartment building was modeled using the computer program 3DMax. Later, each example was altered in appearance from maximum complexity to intermediate complexity to minimum complexity by decreasing the elements on the façades. In order not to affect the respondents' color prefer-
ences, the pictures were shown in black-and-white. Additionally, each view was taken from the same viewing angle, the left front corner of each building (Fig. 4).

**Questionnaire**
The questionnaire consisted of two parts: the first part asked for general information about the participants (house ownership, time spent in the area and previously-lived-in house type); the second part consisted of five-point semantic differential scales concerning the respondents' perception of the building façades of the study. The participants had to evaluate the importance of each of the bipolar adjective pairs on a 1-5 semantic differential scale where 1 = beautiful and 5 = ugly. A total of seven bipolar adjective pairs were evaluated by the participants after familiarizing themselves with the items, four of which dealt with preference (beautiful / ugly, original / affected, pleasant / unpleasant, modern / old fashioned), two of which with complexity (simple / complex, poor looking / imposing), while the remaining items measured impressiveness (impressive / unimpressive). The technique of altering the sets of items from positive to negative, as previously done by Berlyne (1974), Imamoglu (1979), Fiedler (1985), Vischer (1989), Daroff and Rapoport (1992), Zeithaml, et al., (1996), Green (1999), Imamoglu (2000), Veitch and Newsham (2000), Mattila and Wirtz (2001), Brennan et al., (2002), Kaya and Weber (2003), Leather et al., (2003), Yildirim (2005), Lee and Brand (2005), Baskaya, et al., (2006), Akalin-Baskaya and Yildirim (2007) and Yildirim, et al., (2007a, 2007b, 2007c) was adopted to reduce the probability of participants simply marking the scale on either of the extremes.

**Participants**
A total of 50 residents of Keçiören between the ages of 30-45 rated 21 pictures, which were arranged and numbered as previously discussed. Another 50 high school seniors from Keçiören between the ages of 18-20 were included in the work. The samples in each group had a similar diverse distribution by gender: 57% of all the respondents were male and 43% were female.

**Procedure**
Each of the 21 pictures (7 examples x 3 pictures each) was randomly numbered - not numbered consecutively when grouped together in terms of complexity level. The study with the older-aged group was carried out in a local bank in the center of the district during the weekdays, at different hours, early in the year of 2007. In the second study, the high school seniors were collectively presented with the façade images via a digital projector on a 2m x 2m screen. In the questionnaire, the images had the bipolar adjective pairs beside them and were numbered in the same order as presented, which gave the students a chance to follow the pictures on the screen. For both studies, respondents were given one minute to answer the seven bipolar adjective pairs for each image.

**DATA ANALYSIS AND RESULTS**
The dependent variables (preference, complexity and impressiveness) were separately computed for each of the 7 apartment building examples and the three complexity levels (minimum, intermediate and maximum). The difference between the complexity levels was not significant for the 7 examples (p < 0.05 level). As previously mentioned, there were a total of 3 images depicting each of the 7 apartment building examples for a total of 21 images (and therefore responses). In the analysis of the results, the responses for the images in each complexity level were combined, thereby reducing the original 21 to a set of 3.

From the evaluation of the means and homogeneous groups by the variables, the participants seem to have had more positive perceptions about the intermediate level of complexity for all the dependent variables than minimum and maximum complexity levels (Table 1). A Tukey HSD test was employed in order to compare the average values belonging to the differences among the complexity levels, regarding the differences among the dependent variables belonging to the variance sources.
Therefore, Table 1 indicates that perceptions of the façades for the dependent variables were statistically different and the ordering of the façades from the most positive to the most negative value is given as follows:

Intermediate Complexity > Maximum Complexity > Minimum Complexity

According to a one-way variance analysis (ANOVA), the differences among the dependent variables were found to be statistically significant (at a level of $p < 0.001$) for ‘preference’, ‘complexity’ and ‘impressiveness’ (Table 2).

As the complexity level of the façades increased, the participants’ perceptions of complexity increased in a linear relationship, whereas their preference was U-shaped, with preference being significantly higher (negative) for façades of minimum complexity, but significantly lower (positive) for those of maximum complexity, and the lowest for intermediate complexity ($p < 0.001$) (Fig. 5). For intermediate complexity, preference was the highest among the other complexity levels (U-shaped relation). Among all the other levels, both the impressiveness and the perceived complexity were the highest in the maximum complexity level. Surprisingly, preference was not greater than intermediate complexity. All the dependent variables were relatively negative for the minimum complexity level, which means the images of this complexity level were neither complex nor impressive with a lower amount of preference.

In this part of the analysis, the means and standard deviations belonging to the relationships between participants’ age (18-20 and 30-45) with their perceptions of environmental conditions (dependent variables) were determined. From the

Table 1.
'Means, SD and HG of the dependent variables regarding the apartments'

<table>
<thead>
<tr>
<th>Complexity Levels</th>
<th>Minimum</th>
<th>Intermediate</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preference</td>
<td>M 3.26</td>
<td>SD 1.01</td>
<td>HG C</td>
</tr>
<tr>
<td>Complexity</td>
<td>M 1.87</td>
<td>SD 0.90</td>
<td>HG A</td>
</tr>
<tr>
<td>Impressiveness</td>
<td>M 4.07</td>
<td>SD 1.12</td>
<td>HG C</td>
</tr>
</tbody>
</table>

*Note: M: Mean, SD: standard deviation, HG: homogeneous group

Table 2.
'ANOVA results of the dependent variables in terms of the complexity levels'

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preference</td>
<td>Between groups</td>
<td>419,788</td>
<td>2</td>
<td>209,894</td>
<td>178,036</td>
</tr>
<tr>
<td></td>
<td>Within groups</td>
<td>2468,706</td>
<td>2094</td>
<td>1,179</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2888,495</td>
<td>2096</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complexity</td>
<td>Between groups</td>
<td>1846,578</td>
<td>2</td>
<td>923,289</td>
<td>891,449</td>
</tr>
<tr>
<td></td>
<td>Within groups</td>
<td>2171,899</td>
<td>2097</td>
<td>1,036</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4018,477</td>
<td>2099</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impressiveness</td>
<td>Between groups</td>
<td>1906,947</td>
<td>2</td>
<td>953,473</td>
<td>866,763</td>
</tr>
<tr>
<td></td>
<td>Within groups</td>
<td>2908,611</td>
<td>2095</td>
<td>1,388</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4815,558</td>
<td>2097</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: *α: 0.001 is the level of significance.

Figure 5. The effect of complexity levels on the dependent variables.
evaluation, younger participants seemed to have had more positive perceptions about the evaluations of housing facades than older participants in all of the attributes (Table 3).

According to the ANOVA results given in Table 4, the differences between the dependent variables including the perceptions of the façades in terms of participants' age were found to be statistically significant (at a level of $p < 0.001$) in terms of all semantic differential scales (Table 4).

### CONCLUSIONS

According to this study, the high level of complexity of the images represented the present situation in Keçiören, but the local residents did not advocate a preference for this level. As Brolin (1968: 22) argues, the need for too many inclusions to an environment may indicate an unsatisfactory environment. It may, in fact, indicate a lack of mastery and hence a sense of negative identity. The inclusion of too many dissimilar and inconsistent details often obscures the ‘form’ of the building, while less information can actually be boring - in the words of Venturi (1966), "less is bore." Gombrich (1979) argues that a message of maximal information accompanying complexity may appear senseless if the individual cannot decode and make this information intelligible. According to the results of the current study, it was interesting to see that the most complex façades were also the most impressive among all complexity levels, but they were not actually preferred. Instead, preference was much stronger than impressiveness at the intermediate complexity level by showing the existence of a U-shaped relationship, but this relationship seems reversed at the maximum complexity level. In fact, the stimuli of minimum complexity may appear to be too easy to read and boring, whereas those of maximum complexity may appear to be too busy and chaotic.

Unfortunately, impressiveness is not discussed in the literature on this topic as a case being influenced at first impression in terms of initial image (Baskaya et al., 2006). When something is new and different than what people are used to (a building or a car or a building material like glass or concrete, etc) people become impressed with this new thing at first, but later grow tired of it, a product of capitalist consumer culture. The "decorated sheds" of Keçiören with their mosaics were probably initially very impressive when first introduced in terms of "something different." But, over time, even the municipality thought that alternatives had to be offered to the public, the reason why they started the image-plundering from history in the first place. As Baudrillard (1998) mentions, the consumption of goods is a part of the competition for prestige. Interestingly, this competition is carried out by a governmental authority, the municipality of Keçiören, not by local contractors, speculative
developers, professional architects, or other groups normally associated with the commercialization of the built environment. The municipality believes that the ornamentation techniques used generate interest, even in unpromising (read: Modernist) buildings. Architecture here has been used to impose an ideology and, using architectural elements, with no assistance from designers, has resulted in a mixture of nationalist and Islamic appearances. Those designers reluctantly working for the municipality as technicians have also been very much involved in creating these "decorated sheds," for they must deal with the populist ideologies of the administration and concentrate on the ornament or on the façades as an envelope of the built environment just to attract buyers.

As Bourdieu (1984) suggests, cultural tastes are largely shaped through elite social groups. In the example discussed in this paper, this taste attempted to be defined and redefined by a local authority that does not represent an elite group. Adopting a nationalist and/or Islamicist discourse, the municipality tried (and continues to try) to shape architectural and urban characteristics with eclecticism and collage, creating a district full of "decorated sheds." The result in Keçiören is variety, which translates into chaos rather than unity. Decorating the façades of Keçiören has become like an "arms race" (Venturi et al. 1972) between competing attractions in the district. This phenomenon might be named as "appropriation of the past for present purposes," an aggressive way of dealing with the past (Nesbitt, 1996: 41). Dangerously, this "false appearance" has spread like a cancer to other districts in Ankara and has been called "a new fashion" - at least until everyone gets tired of it and begins to search for a new way to manipulate the built environment.

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THE QUARTER: A COMPLEX OF NEIGHBOURHOOD UNITS IN TURKEY

Ayhan Usta & Gülay K. Usta

Abstract
In history, spatial organizations for houses have been changed and improved depending on the natural conditions, well-being of people, utilization of resources, population density, family structure and urbanization rate. It can be said the spatial organization of housing that they are both in a relationship with culture and they are a total configuration of social, demographical, psychological, human behavioral and environmental structure.

Any housing settlement in Turkish Islamic tradition is macro and micro scaled organization in which social relation and cultural characteristics of society that are necessary for physical environment and society reflect.

Basic element of urban spatial organization in Turkish Islamic housing pattern is "the quarter". (Quarter is called as 'mahalle' in Turkish culture) The quarter contains functional and semantic characteristics which are common for most Islamic civilization and Turkish Islamic cities.

In this study, what meaning does the quarter have as smallest spatial organization element in Anatolia will be examined. In addition what kind kind of evolutionary process does the quarter face in Turkish settlement.

Keywords: Tradition, Turkish Housing Settlement, Neighbourhood Units, The Quarter.

INTRODUCTION

Architectural forms, the art of creating the space, reflect the economic and social features of a society. Among the architectural forms, housing, which is the outcome of the sheltering culture of a person, takes the lead of the forms directly reflecting the social and economic features of society, (Banz,1970; Frampton, 1986) Architecture of house is forming various typologies both as a single unit, which has own functional, formal and structural features and as a neighbourliness relations depending on the characteristics of the environment it belongs.

These typologies reflecting different spatial organizations have changed and made progress depending on natural environment, belief system, ideology, production form and relation of the society. As a result of these, it also depends on the level of the development, utilization of the resources, distribution of the income, population increase, spatial distribution of population, urbanization type and rate and family structure, (Panteous,1977; Krier, 1984). One of the typologies varied from one society to another is "quarter", which is the name of the living environments consisting of the neighbourhood units in Turkish Islamic Culture.

In this article changes appearing in the organization of the quarter depending on the changes in the way of living of society in Turkish Islamic Culture are analysed. With this aim, Dialectic System view, one of the system approaches is used as a method in the study. As it is known, theories approach the system concept focusing on fragment-whole relations called as a Gestalt system view, (Koffka, 1935). Dialectic system view within Gestalt theory is interested in long-lived non-transformational changes. According to this view, the system is a whole; while it is in mutual interaction with its environment, keeps on the internal progressions. Comprehending the changes in this system is required to understand the mutual effects of the external and internal dynamics of the system. In the Dialectic system view, the whole has to be a social structure on which the architectural system is always based. According to the Dialectic system view, the internal process affecting the social structure such as industrialization, urbanization and getting crowded bring up the frames in which the architectural design methods are determined, (Tekeli, 1971).

This study is looked for the responses of two questions, using the dialectic system view:
1. Which stages of change have Turkey passed in social and economic fields, and what are their effects on the life style?
2. How have these stages reflected in the formation of “the quarter” as the unit of the housing settlement, from the architectural viewpoint?

With this aim, firstly, the structure of the residential living environment will be analyzed from the social, economic and cultural perspectives in the context of the neighbourliness relations. Then, it will be considered comparatively the changes in the life style and the evaluation of the quarter in the Western societies and the urbanizational and cultural function of the quarter in Anatolia. In the last part of the study, the applying of the method, explained above, to Turkish Republican cities, the findings and the outcomes will be discussed.

THE QUARTER COMPOSED OF THE NEIGHBOURHOOD UNITS AS A CULTURAL LIVING ENVIRONMENT

Rapoport (1977) defends a hierarchy of a world view peculiar to the culture as it is ranging from the up to down value, image/schema, life style, activity/action. According to Rapoport, the mental schema shared by the elements of cultural group causes to the occurrence of the visual patterns and orders in that culture, (Rapoport, 1969; Rapoport, 1977).

The studies undertaking since Rapoport once have stated that cultural characteristics are a universal matter while the forms that occur depending on the characteristics are regional. Altman (1977) states that the behavior patterns as cultural characteristics, such as privacy, personal space, sovereignty space and feeling crowded, are universal, but the verbal and non-verbal expressions are peculiar to the culture, and the cultures differentiated the degree and the intensity of the expressions. So, the form of a housing is a means of expressing the culture’s world vision, norms, images and schemas, life style, primary and secondary functions of the housing.

Housing are formed according to the cultural characteristics and life style of the society to which they belong to. It is known that the societies showing similar cultural characteristics have reflected similar residence forms. However, the societies which do not show the similar characteristics have had different housing typologies, (Rapoport, 1983; Hester, 1975).

Any housing settlement is a macro and micro scaled organizations which reflect its physical environment, the social realities of the society it belongs to, and the cultural characteristics of its social structure. There are one to one similarities between the structural features of the neighbourhood relations and the social and cultural systems especially in the settlement samples of the primitive societies. In these settlements, economic and religious obligations of the society and sense of values have reflected in the form of the sheltering space directly, (Figure 1).

The formation of primitive housing groups show known, certain and unchangeable features within the same society or in the societies reflecting similar value pattern. Social and cultural organizations have shown an absolute identity with the organizations of the neighbourliness relations, because in the primitive societies the social structure has been formed according to the internal relations and the spatial organization has exactly reflected these relations. The absolute closeness of the economy and the solidity of the belief system are the most important characteristics of this type of organization.

How is the situation in the slave-feudal social system, which is based on the agricultural economy and is the model of more developed social organization? Although in the slave-feudal social structure, there are some differences between the spatial organization and the life style, the models of the organization of the primitive societies are continue to be exist. In this period, some social classes and sections have begun to emerge depending on the social production relations and life styles.
Therefore, the structure of the neighbourliness relations has also begun to change. For instance, different residential architecture and different neighbourliness relations have begun to emerge in the social groups having the similar technologic and cultural structure. These differences can be followed in the living environment of the upper class more easily than in the living environment of the lower class.

Being examined Europe in the Middle Age and Anatolia from their urban settlement view it appears that living environments constituted by the ethical and occupational groups are composed of the units of neighbourhood. Living environments, known as “the quarter” have common values from the viewpoint of social interaction-production form, cultural and religious elements. For example, in Venice, the quarter has developed according to the local religious centres, but many cities in Western and Central Europe are divided into districts named by the occupational groups of inhabitants such as ironsmiths district, seller of packsaddles district, etc. (Yücel, 1977; Mumfort, 1961).

In Anatolia, quarters are the units which are certain and self-sufficient. The religious-social centers, market places, public fountains and wells are the physical elements of that self-sufficiency. The bigger the quarter is, it is divided into smaller sub-units such as sub-quarters and neighbourhood units. All of the primary and secondary groups that came into being as the result of the division have formed the whole structure of the quarter; but some common characteristics of the quarter such as socio-economic and cultural features, have disappeared because of the growing size. In Europe in the Middle Ages, the quarters that have different socio-economic and cultural characteristics, and composed of various the neighbourhood units have formed the urban structure.

THE CHANGES IN LIFE STYLE AND THE EVOLUTION OF THE QUARTER IN THE WESTERN SOCIETIES

The collapse of feudal system, rise of monarchies, international voyages and discoveries, the intensification of commerce in big cities have begun to change social production relations and economic living conditions since 14. Century, (Webber, 1967). These changes together with other developments preparing the New Age have directly affected the social, cultural and morphological formation of the quarter.

The changes formed by these facts are below:
- In the traditional sense, religious and occupational quarter organizations have been replaced by the organizations based on income groups.
- The organizations of quarter that have formerly privacy and autonomy as a reflection of the social relations and economic-cultural life styles; began to lose its unity (disengagement) gradually.
- The central organization seen in the urban scale has made progress parallel to the cities’ expansion. This progress has naturally affected the physical features of spatial organizations in housing.
- Bourgeoisie becoming more powerful with the industrial revolution has begun to gain power over the monarchy and aristocracy, (Prienne, 1969).

Thus, the social structure in the form of monarchy-aristocracy, commercial and artisan bourgeoisie and its internal hierarchy has changed. Consequently, quarters forming the city structure have begun to take shape according to these changes in life styles. For instance, new bourgeoisie gaining political power, coming together with some groups of old aristocracy have begun to live in the most developed and the best furnished quarters of the city. Other social groups and classes and the small bourgeoisie formed by different income groups have reflected a certain social and cultural formation in their neighbourhood units and gradu-
ally in their quarters, (Raskin, 1974).

After the industrial revolution and its earlier periods industrial foundations in the surroundings of the big cities have caused masses of the workers moving from the rural areas into the cities. People coming to these cities, constituting generally the poorest section of society have formed their own quarters either in the slum areas of the cities or in the surroundings area of industrial foundations, (Figure 2).

THE CULTURAL AND URBAN FUNCTIONS OF THE QUARTER IN ANATOLIA

A quarter is the basic unit of Turkish-Islamic cities. As it is mentioned before, a quarter, as a social "entity", is formed by religious or occupational separations. A quarter contains functional and semantic characteristics, which are common in all Islamic civilization and Turkish-Islamic cities.

How is the organization of the quarter in the Turkish-Islamic urban pattern? It is known that in old Turkish cities road patterns were formed spontaneously in free forms oriented by people's necessities. This kind of urban pattern, seen in all Islamic cities has unplanned, organic form in contrast to Western cities planned geometric pattern, (Aru, 1998). Quarters which develop depending on this kind of urban pattern, have structured by the bunch of road systems extending from the centers of quarters to their surroundings. These can be regarded as radically blowing up services. The cities, Manisa and Maras in Anatolia can be shown as an example of radiant service explosion.

Natural boundaries of a quarter are determined by the distance, 170-200 meter, from center of the quarter where the mosques or masjid is located, so that anyone can hear the "ezan" (the call to prayer). It is accepted that these bunchy patterns have been instinctively formed, (Aru, 1998), (Figure 3 - 4).

House developed around a central courtyard which is generally closed the outside is this primary unit of the quarter. Mostly narrow intermediary streets and dead-end streets serving usually a small group of houses, provide external life connection for houses, (Figure 5). Institutions such as masjid, fountain, dervish lodge, primary school and at the later periods coffee-house (kahvehane) are the features of neighborhood units which provide base to the quarter pattern in Anatolia, (Figure 6).

When it is considered that the quarter and its surrounding urban pattern is more important particularly for women and children in comparison with the city as a whole, the social life in quarters develops from interior through exterior as follows;

--Housing-inner courtyard (Family circle / inner privacy)
--Dead-end road (Neighborhood circle / marginal privacy)
--Quarter (Wide external circle), (Yücel, 1977).

In Anatolia, from the social and economical viewpoint, the meaning of the quarter's spatial organization and its importance in the urban pattern are different than the European cities in the Middle Ages. Because in European Middle Ages city, quarter forms a settlement that turns toward the local
The Reflection of the Alterations of Life Style on Quarter in Turkey

As known, from the viewpoint of social science, Turkish society has been in the process of cultural evolution for about 200 years. That process is manifestation of the desire for claiming capitalism as an expression of the concepts of modernism, improvement and development.

The aim of this process whose origin extended as far as the late Ottoman period is to create a bourgeoisie culture while becoming industrialized under the leading role of the state.

However, at the beginning, this process, which showed a foreign dependent development has not managed to surmount the existing dual social order (folk and bourgeois coming from soldier and bureaucrat origin), (Mardin, 1994). That is why the Ottoman Empire hadn't experienced industrial revolution. Consequently, the probable alterations in quarters, which arc in close relation with social and cultural order are not the outcome of industrialization process. It is merely the alterations reflected to the spatial organization as an extension of Westernization efforts. Some of the reasons of alterations are: -The control of the land ownership is no longer under the central administration. -Heading towards Western model of organization on social order. -Alterations on transportation technology. -Heading towards the housing building technology by grand investment.

On account of the reasons mentioned above, there has been an alteration on the traditional quarter concept. Nevertheless, in this period class and ethnical differentiations are clearly noticed. The quarters in the cities have come to forming physically and socially according to this differing class distinctions.

Naturally, the spatial order of the quarter has begun to change. The housing groups, which sometime located in congested and crowded old quarters and sometimes build on large parsels as apartment houses, mansions and suburban residence, have constituted the main element of the quarter.

Meanwhile; open and closed space continuity concerning the quarter plan was raveled. In this way, the hierarchycal spatial organization of the quarter in relation to city -such as housing-street-quarter-city centre, has fumed into such sequence.
of open space; center of quarter-street-city centre, (Yenen, 1993).

The culture which is dominant and organized in the early years of the Republican period is the culture of the Ottoman bourgeoisie mentioned above. Because, despite the state newly founded, the new state cannot be formed its own social dynamics related to economic life, (Usta and Usta, 1995). The efforts of becoming contemporaneous in relation to economic production relations and social life and the process of turning to the West have constituted the main feature of the Republic, because Atatürk -the founder of the Turkish Republic-believed that formation of a national conscious, social and cultural identity can only be possible through becoming industrialized and economic advancement. Therefore an argument was taken up whether the priority in economic life should be given to the individual or the state, and the state had the priority. In this way, the idea of forming a bourgeoisie by the state has been dominant in the early years of the Republic as it is seen in the late period of the Ottoman Empire.

1930-50 period intended to realize the administration and inspection of the new social order. It is why the spatial organizations with social content have materialized within the urban pattern; among these, the Republic Squares are of the most familiar one that found the application field with the legal arrangement through villages to cities.

The Republic squares reflecting economic, social and political tendencies of the period gave the ground of the new spatial organization defined as the Republic quarter. These quarters, which formed independently of social and cultural way of life become a stranger to the traditional meaning. At that organization, in which motor vehicle transportation is a diagnostic element, the distinctive components were the road grid pattern, where the size of roads and streets were set for motors and paved by concrete or cobblestone, and the housing reflecting architectural style of the period, (Usta and others, 1996). (Figure 7).

1950s, that is the period in which, through multi-party system, the concrete progress has been made in Westernization and capitalization process. As the cities getting crowded rapidly due to socio-economic changes, the housing problem has begun to growing up. Since solutions were not taken up with a planned approach, quarters were developed disorderly and unstable.

The most important reason of this disorder is that different social, economic and cultural groups were inclined to meet their housing needs in different neighbourhood units, independent from each other. Consequently, in the urban space, some poles reflecting class differentiations have been formed, and social decompositions have been obviously reflected in neighbourhood units in the quarter. Quarters composing of squatters, apartments and luxurious buildings have formed the main units of the urban housing pattern. In the process of this decomposition, social and cultural
characteristics of the quarter have gone erosion and even been disappeared. In this period, the changes in the organization of the quarter can be summarized on old and new comparison as given below, (Table 1).

1980s were the years, in which progress and changes mentioned above took place the most intensively. With the January 24th decisions 'etatism' approach was left in economy and the liberal economic policies have been adopted. Privatization has been the common point for all social groups. Especially in this period, the process of getting wealthiness has been realized among some social groups. On the other hand a large part of the society has become poorer during this period. It seems that the thought of creating Republican bourgeoisie, the main aim of the Republican administrations has come true, but the traditional dual structure talked about before is still current.

A real class differentiation has appeared as a result of economic and cultural preferences of the social production forms and the relations. This fact, developing out of intention of the Republican administrations has started a rupture process in nearly all parts of housing environments.

Mass housing law made in 1980 and its applications aimed to provide the housing for different socio-economic groups. Yet, its chance of realization is fairly insufficient in the economic unsteadiness, and in political and social order of the period, (Figure 8, 9). With the relative affluence, the quarter concept that left entirely its traditional meaning has become solely nostalgic approaches. The squatter has seemed to become formal housing policy of the state due to frequently legating by development pardons.

CONCLUSION

The main ideologies of the Republic administration modernization and westernization have naturally had an influence on social structure and urban space. Rural culture and social order, based upon agriculture have been replaced gradually by a urban culture and a society working in the industrial fields. As a result of this alteration, social classes has begun to form in Western sense and variations urban environment has emerged.

The research done through the dialectical system view, indicates from the housing viewpoint, the cities in Turkey are composed by quarters conceptually, but as meaning and contents the cities combined of squatter housing zone and mass housing which accommodate different incomes and cultural groups. With traditional and sociological sense, the quarters being spatial organizations where neighborliness relations are thought essential have been replaced by the spatial organization where construction-settlement orders are considered important.

In Turkey, economic hardships that the Republic administration had experienced at 10-year intervals transformed the popular approaches into official policies concerning social and economical structure. The newly found quarters became architectural organizations where fashionable approaches for the day were approved instead of being sustainable cultural and spatial organizations. Whereas in Turkish-Islam culture, sustainability the neighborliness relation - the basic element of the quarter's formation with its symbolic, functional, cultural and physical manner is of so crucial on housing settlement. Today, the life styles altered perpetually, transferring the social relations and behavior to the architectural organizations are very important from cultural and psychological point of view.
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73
ASSESSING LAGUNA DISTRICT'S SPATIAL QUALITIES IN GAZIMAGUSA, NORTHERN CYPRUS

Mukaddes Fasli & Farnaz Pakdel

Abstract
This study assesses the Laguna District's spatial qualities in Gazimagusa. Gazimagusa is a coastal settlement that possesses long golden beaches. However, almost all sea fronts are closed to the public. There is both a physical and a visual barrier along the sea-shore. The Laguna District is the only area in the city, where the sea-shore is open to the public. Therefore, this district is an important area. In this study, three indicators and eleven determinants are used to assess the spatial qualities of the Laguna District. The indicators are natural and physical aspects as well as existing functions and activities in the district. In this research, the determinants are used in question form for assessing the spatial qualities of the Laguna District. The first part of this paper discusses some theoretical issues related to the significance of sea fronts in respect of coastal settlements and the spatial qualities of the coastal districts. Observation and physical analysis methods are used for assessing the spatial qualities. According to findings, some recommendations are given for improving the spatial qualities of the Laguna District.

Keywords: Laguna District, Spatial Quality, Coastal District, Sea Front, Gazimagusa.

INTRODUCTION: THE SIGNIFICANCE OF SEA FRONTS FOR COASTAL SETTLEMENTS

As is mentioned by Moughtin (2003), water can be integrated with cities in four different ways as follows: 1) As water points or fountains, 2) pool, 3) a linear water-course, which runs through cities in the form of either a river or a canal and, 4) a fourth and last type of water feature associated with the city, is the coastline.

The main uses of the waterfront are as follows: the commercial waterfront, the cultural, educational, environmental waterfront, the historic waterfront, the recreational waterfront, the working waterfront, and the residential waterfront (Sairinen R, Kumpulainen S. 2006; Breen A, Rigby D. 1996). Coastline that is a kind of waterfront can possess one these uses.

"Coastlines are the world's most important and intensively used areas in which humans have settled. Out of the six billion people alive today an estimated 1.7 billion, or 38 per cent of the world's population, live within 50 km of the coast. Nearly 45 percent of the global population is estimated to live within 150 km of the coast" (Behzadfar M., 2007: 298, Key R. & Alder J. 2005).

The sea front is a part of the coastline. It edges cities, towns or districts of all sizes. As is mentioned by Numan J. et al. (1999), for city development, integration with the sea front, is an important issue for consideration.

The sea front acts as a borderland between the controlled urban structure and uncontrolled nature (Sairinen R. & Kumpulainen S. 2006). Recreating the coastline of coastal settlements means creating new public spaces (Wakefield S. 2007). The sea front is considered as one of the public open spaces.

Public open spaces can be defined as: "the common ground, where people carry out the functional and ritual activities that bind a community, whether in the normal routines of daily life or in periodic festivities" (Carr S. et al. 1992: x). Public open spaces are the places in which private and common requirements appear (Sonmez T. H. et al. 2006; Ozaydin et al. 1989).

"The major public spaces of the city have always had city-wide significance" (Madanipour 2004: 269; Braunfels W. 1988; Gehl J. 1996; Worpole K. 2000; Moughtin C. 2003). As is defined by Pasaogullari & Doratli (2004) public spaces have a central role, both physically and functionally, in urban planning and development.

Public open spaces provide the greatest amount of human contact and interaction. They
provide the channels for movement, the mode of communication, and the common spaces for play and relaxation (Madanipour A. 1996). "The provision and use of public open spaces in a city is a vital factor in promoting social cohesion and urban revival" (Oktay D. 2001: 27).

Sea fronts that are designated as a public open space expect to gain much more recognition and importance, especially in coastal settlements. Sea fronts are the major attractions of the coastal settlements. Generally, they are designed with marinas and a variety of recreational activities. These spaces offer a social gathering place for people for entertainment, relaxing and various other purposes. The most important feature of a costal settlement, which distinguishes it from other settlements is, of course, the coastline. Coasts offer a dynamic environment with various functions which survive cities with different aspects; tourist attraction, gathering area, economic advantage, and global transportation. They also have a potential for providing the users a pleasurable experience.

Having understood the importance of the sea fronts to coastal settlements, in this research, the aim is to assess the spatial qualities of the Laguna District in which one of the sea fronts of Gazimagusa is situated. This study will provide a framework for improvements in the district and also a method for analyzing other similar coastal districts.

SPATIAL QUALITIES OF COASTAL DISTRICTS

Today, the public is becoming increasingly aware of the qualities that make coastlines attractive (Ruker N. 2002). On the other hand, the concept of quality has a strong link between people and the built environment, which is mediated by human senses and perceptions (Chapman D. W. et al. 1999). Chapman also states that: 'The word 'quality', as applied to urban environments, has become prominent in the planning and design professions, but its most noticeable rise has been during the last decade and a half' (Chapman D. W. et al. 1999: 211).

In order to have effective design and management of a coastline, it is essential to understand the spatial qualities affecting coastlines. Spatial quality is a multidimensional concept that is a product of the various interrelated aspects of a district. "The districts or quarters of a city, as a defined architectural entity, are perceived in several ways" (Oktay D. 2002, P.262). "Districts are the medium-to-large parts of the city, which observers mentally 'enter' and / or which have the identifying physical character of thematic continuities in terms of texture, space, form, detail, symbolic value, uses, inhabitants, maintenance, topography, etc. Districts may have hard, precise boundaries or soft uncertain ones gradually fading away into surrounding areas" (Carmona. et al. 2003, p.90).

Some of the recent approaches to the concept of district, quarter or neighborhood (Oktay D. 2002, Kallus and Law-Yone, 1997) adopt certain themes for their analysis, such as management, healing, welfare, association, order, participation, meaning and identity. Besides, they can be analyses in terms of social, political, natural, ecological, physical and functional points of view.


The spatial quality of a coastal district can be assessed through the detailed examination of 1) natural aspects, 2) physical aspects and 3) functions and activities. The natural aspects include the contribution of geography, water, topography, climate and greenery of a coastal district. The physical aspects possess the characteristics of existing
buildings, streets, squares/plazas and street furnishing elements. The functions and activities are the last determinants of spatial quality that include the existence of sea related functions and alternative places for social activities (Fasli, 2003) (Table 1).

**NATURAL ASPECTS**

The natural aspects include the contribution of the five natural determinants of a district. They are the geographical formation, water, topography, climate and greenery. The geographical formation of coastlines can be altered by using different materials. The form and the materials used affect the spatial quality of a coastline. The presence of water on a site influences the spatial quality of a district for several reasons. Since, it is the principal and single most important base element in the supporting of all life forms, (Brogden, 1979, Synder & Catanese, 1978). Water has both an aesthetic and positive physiological effect on human beings. On the other hand, the topography relates with level changes that affect sea front enhancement. It greatly affects both the perception and the environmental qualities. Climate is the other natural aspect of a coastline. As is stated by Lauriel (1975, p.167), "it is the net result of several interacting variables including temperature, water vapor, wind, solar radiation, and precipitation". In hot countries, especially, coastlines should be designed in such a way as to satisfy both day and night use. Semi-open spaces provide shady areas for day time uses. Greenery refers to planting material. Greenery adds both aesthetic and functional qualities to a district besides having a positive psychological effect. Its quality arises from the relationship between the properties of the greeneries and the effects of those properties on the human observers (Daniel, 2001).

**PHYSICAL ASPECTS**

The physical aspects comprise the effect of four physical determinants of a coastal district. The characteristics of existing buildings, streets, squares/plazas and street furnishing elements in a district greatly affect its spatial quality. Existing buildings at the coastline should not be bulky or built on an inhuman scale, and their design should be such that the sea views are not obscured. Vehicular and pedestrian circulation issues should also be taken into consideration. Streets and pavements should be designed in such a way as to ease public access to the district and coastline.

The suitability of the covering material used on streets, pathways, and pavements in public spaces is very important as well. The surface textures should not be so coarse as to create difficulty for walking or for wheelchair mobility. They should be constructed in such a way that they are appropriate for use by the whole community. The common square/plaza is another significant urban space in a district. Typically, they are paved, and surrounded by high-density structures. They also contain features designed to function as a gathering and meeting place, attracting groups of people. (Lynch K. 1981). Furthermore, the quality and quantity of the street furniture is also an important issue in respect of the spatial quality of a coastal district. Appropriate and adequate street furniture should be located in such a way as to meet both the needs of the individual those of groups.

**FUNCTIONS AND ACTIVITIES**

The functions and activities include two determinants of sea related functions and alternative places for social activities in a coastal district. These two determinants greatly affect the spatial quality of the district by attracting people to it and keeping them there. People might have different purposes for using the coastline including walking, sports, relaxing and socializing, etc. The availability of water related activities at the coast is important and, therefore, the analysis of coastal activities is significant.

<table>
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<tr>
<th>Indicators</th>
<th>Determinants</th>
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<tr>
<td>Natural Aspects:</td>
<td>- Contribution of geography, water, topography, climate and greeneries to a district</td>
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<tr>
<td>Physical Aspects:</td>
<td>- Existing buildings, streets, square/plazas and street furnishing elements characteristics</td>
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<tr>
<td>Functions &amp; Activities:</td>
<td>- Sea related functions and social activities (water sports and others)</td>
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Table 1. Spatial quality indicators and determinants of a coastal district
A threefold classification of water dependence is possible as such: 1) water dependence uses (waterfront location is indispensable) 2) water related uses (maximizing the advantage of waterfront location) and 3) water independent uses (neither dependent nor related to the waterfront) (Sairinen R. & Kumpulainen S. 2006). The coastline should provide a variety of social activities and water sports that meet the needs of a variety of users.

The eleven determinants of the three indicators mentioned can be used for analyzing the spatial qualities of a coastal district. The objective of a spatial quality assessment is to increase the awareness of designers, planners, the community, as well as local and central government authorities in respect of the qualities of a coastal district and the potential for their users.

THE CITY OF GAZIMAGUSA (FAMAGUSTA)

The city of Gazimagusa is one of the coastal settlements of Northern Cyprus. It is situated on the eastern coast of the Mediterranean Sea (See Fig. 1). It is the second largest city of Northern Cyprus with a population of approximately 35,453 (2006). It possesses the largest and most well-equipped port of the island, which serves the whole of Northern Cyprus. Apart from the port, which generates a large proportion of the economic activity in the city, the Eastern Mediterranean University, which is the largest university on the island, with a student population of around 15,000, has also become a main source of economic activity.

The history and urban development of Gazimagusa dates back to the first century AD and the contemporary city has been developed throughout seven particular periods: the early periods (648-1192 AD - the foundation of the city); the Lusignan period (1192-1489); the Venetian period (1489-1571); the Ottoman period (1571-1878); the British period (1878-1960); the period between 1960-1974; and the period after 1974 (Doratli, N. et al. 2007).

Throughout history, the city has housed many remarkable remains of the historical, architectural and cultural heritage of the island. Today the city of Gazimagusa is composed of four main quarters: the Walled city (Old City), Asagi Maras (Kato Varosha), The Maras (Varosa) region and the new developing areas to the north-west of the City Walls (Doratli N. et al, 2001).

Following 1974 the part of Varosha that is adjacent to the Laguna District was closed to habitation. The closed area of Varosha formerly housed mainly hotels along the shore and residential buildings in the inner part.

Turkish Cypriots and University students constitute the population of the city. It is traditional for Turkish Cypriots to use their exterior spaces for a variety of different purposes, since summer-time usually lasts for about nine months in Cyprus. Most of the population of Gazimagusa including the students use the outdoor spaces rather than the indoor ones. In general, coastal settlements provide great potential for a variety of outdoor activities.

However, this is not so for the city of Gazimagusa, since over time, its direct communication with the coast has been interrupted. Today most of the coastal area are used as a port or military area and is closed to the general public. The Laguna District is the only area where the coast and sea-shore area are open to be used freely by the public. Therefore, it is an area of great importance.

BRIEF DESCRIPTION OF THE LAGUNA DISTRICT

The Laguna District is the only ‘breathing’ place for the citizens of Gazimagusa. It possesses a recre-
The Laguna District is located on the south east of the city. It is bordered by the Mediterranean sea on the north-east, by the closed Varosha district in the south and by the military zone on the west (Numan, I. et al. 1999). It was previously extremely poor in terms of its spatial qualities and aesthetic values, and was only used in the summer evenings and nights (See Fig. 2.).

The project includes a recreation block - 3 restaurants and 4 cafes, outdoor sitting areas, paths for pedestrians, car parking areas and landscaping arrangements. The new project, which was completed by the end of 2007 provided the District with a new and more positive image. (See Fig. 4).

**METHOD OF STUDY**

The study done on the Laguna District comprises a detailed observation and physical analysis as well as a theoretical review. Text, data, maps and drawings were collected from various sources.

Detailed examinations of the natural and physical aspects were carried out at the site as well as a function and activity analysis. In order to assess the spatial qualities of this district, eleven research questions that constitute the determinants of spatial quality are posed and answered. The method that is used in this research for assessing the spatial quality at Laguna District is made up by the authors of this paper.

**NATURAL ASPECTS**

For assessing the natural aspects of the Laguna District, the following questions are posed:

- How does the geography of the area contribute to this district?
- How does the presence of water contribute to the district?
- What is the role of the topography in the district?
- What is the effect of the climate on the district?
- What is the effect of greeneries on the district?

The geographical formation of the Laguna District is in organic shape and the sea-shore is covered by...
sand and stone. The natural rocks in sea create magnificent views under shallow sea. No water treatment is used for enhancement of the sea front and the district. The topography is flat in the Laguna District. Small changes have been carried out in front of the recreational buildings. However, these levelling do not maximize the perception of the coastline.

Climate is another key issue of the natural aspects of this coastal district. Since there are nine months of summer in Cyprus, the existence of semi-open spaces near the coastline is especially important. When the Laguna District is evaluated in terms of the shading elements, it is seen that only the recreation units nearest to the sea have semi open spaces in front of them. However, these elements are not sufficiently adequate to protect the users from high sun radiation during the hot summer period. The last key issue of the natural aspect is greeneries. In the Laguna District, palm trees are dominant on the pavements. They orient people along the sea-front. However, the greeneries do not provide sufficient shade from the sun.

PHYSICAL ASPECTS

In order to assess the physical aspects of the Laguna District, the following questions are put:
- What is the level of quality of the existing buildings?
- What is the level of quality of the existing streets and pavements? Do they provide easy access to the district and the coastline?
- Are there any plazas/squares at the sea front and/or in the district? If so, What is the quality like?
- Are the existing street furnishing elements adequate and appropriate for the district?

The Laguna District includes a five star hotel, apartment blocks, schools, a few housing units and a recreation block, which houses cafés and restaurants. The existing buildings in the Laguna District have an architectural style. However, the height of the apartment blocks and of the hotel is of an inhuman scale. They obscure and obstruct magnificent sea views. On the other hand, the recreation block is only one storey high.

There is, therefore, a considerable level difference in height between the new recreation building and the existing apartment blocks and hotel.

At Laguna District, there is only one vehicular street (Havva Senturk Avenue). It has pavement on two sides. The width of the pavements is 2,5 metres, which is ideal for public use. Furthermore, 0.70m is left for the landscaping along the pavements. Different materials were used for surfacing the pavements. Whilst some coverings are universally appropriate, some create a problem for disabled or elderly people as a result of their texture as aforementioned. The pavements are used for circulation, resting on the benches and looking at the beautiful sea views.

Havva Senturk Avenue provides easy access to the Laguna District. This street location has negative connotation because it is placed right next to the sea, and as a result it not only disturbs pedestrian circulation but also prevents direct contact with the Sea.

There is a plaza area next to the sea. It is defined by a L-shaped recreation block.

Small level differences in the plaza area are solved by stairs together with ramps. The plaza is accessible by everybody. It has a lot of space for outdoor activities. However, almost all surfaces are covered by hard material and the semi-open spaces are limited in size. Therefore, it is difficult to use the outdoor space during the day in the summer season.

When the street furnishing elements are analyzed in the Laguna District, it is seen that, they are insufficient in number and there is no variety in the seating benches besides they are only face to the sea. There are no alternative seating arrangements. The location of benches and their relationship to each other is of prime importance for getting better views and communication.

FUNCTION AND ACTIVITIES

In order to assess the function and activities of the Laguna District, the following questions are posed:
- Does the District include sea related functions?
- Does the District provide social activities (water sports etc.)?

The Laguna District is not rich in terms of sea related functions and other independent ones. There are only a few sea-food restaurants, a few cafes for socializing and a children’s play area. However, the children’s play area is not very popular with families, as the parents can have little or no direct contact
with their children whilst sitting inside or outside of the recreation block. Since, children playing area is located at the back of the recreation block. The district is also poorly served in terms of water sports. Only, a part of the beaches is used for swimming, because, proper spaces for swimming is very limited and a part of the beaches only free to hotel customers. Besides, it rarely used for scuba diving. There are no any other specific spaces designed for other water sports.

The findings related with the Laguna district are given under the Table 2.

### CONCLUSION

The main aim of this article is to assess the spatial qualities of the Laguna District. The Laguna District is not only the berating point for Gazimagusa but also the recreational point as well. Considering the significance of sea fronts for coastal settlements, the significance of the Laguna District gains much more importance.

In order to assess the spatial quality of the Laguna District eleven research questions have been raised. They are the determinants of the three indicators. The indicators of the spatial qualities of coastal districts are the natural and physical aspects as well as the existing functions and activities.

The findings clarified that the Laguna District has an organic, geographical formation at the coastline. It shores are covered by sand and stone. Existing natural rocks in low sea water create magnificent views. There are small level changes in the district and in the embellishment of the sea front. There are inadequate semi-open spaces in the district considering the hot climate of the island. In order to achieve vitality and attractiveness in each season, more shaded areas and shading devices are required. Palms trees dominate in the district, however, they do not provide adequate shading. It should not be forgotten that especially in a hot climate, oval and round trees are more efficient in providing shade.

The existing buildings in the district have an architectural style. However, there is not unity between buildings in terms of scale. They also obscure the magnificent sea views. The existing vehicular street in the District runs alongside the sea, therefore, it obstructs direct contact with the
sea. On the other hand, the street has appropriate pavement on two sides for public uses in terms of width. However, some parts of the pavement covering is not appropriate for disabled and elderly people. The district has easy access, however the shore is hidden. There is a plaza in front of the sea that is defined by a recreation block that includes cafes and restaurants. Almost all the plaza is covered by a hard surface, which is not ideal for the hot climate. To solve this problem, more landscaping could be arranged in the outdoor spaces to provide more shaded and cooler areas. Street furnishing elements in the Laguna District are not adequate and their organization is not suitable for group use. Benches should be arranged in curve, L shape or face to face organization besides linear arrangements to satisfy both individuals and groups needs.

Whilst the Laguna District is evaluated in terms of sea related functions and activities, only a few sea-food restaurants exist in the district, which are relatively distant from the sea. However, people expect to find more sea related and magnetite functions in a coastal District such as: sea faring related clubs, shops selling sea foods and sea goods and places for hiring sea sport materials etc.

Besides, the district is not rich in terms of social activities, there are a few cafes for setting and a children’s play area. In addition, a limited area is used for water sports such as swimming and scuba diving. However, in order to improve the spatial quality of the district, a dock for boats, proper fishing areas, and terraces with a sea view, as well as designed places for more water sports.

This study established that although the new sea front treatment has improved the district’s spatial quality, it is not so effective as to attract people to the district and/or keep them there. Therefore the recommendations that are offered in the conclusion should be considered in order to improve the spatial quality and attractiveness of the district due to their significant contribution in attracting and holding people in a place.

Besides, it also provides a framework for increasing the awareness of designers, planners, local and governmental authorities in respect of the qualities of a coastal district and the potential for their users. Furthermore, the determinants that are used in question form for assessing Laguna District’s spatial quality can be used for assessing the spatial qualities of similar coastal districts.

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The book called "Housing and Environmental Conditions in Post-Communist Countries" contains a collection of twenty seven seminar papers, which were presented at the Silesian University of Technology in Gliwice between 11 - 13 October 2007, two guides for Tychy and Nova Huta, and a detailed overview of the seminar.

The symposium had an interdisciplinary nature combining the papers of sociologists, geographers, economists, real estate specialists, environmental psychologists, architects and urban planners. As it is presented within the overview of Elzbieta Niezabitowska, which takes place at the end of the book, these papers contain:

- comparative studies of social and demographic problems,
- case studies on social, spatial and economic problems in various cities in post-communist countries,
- urban quality problems,
- housing environment quality problems,
- free market economy and its impact on real estate market,
- legal and economic forms of housing,
- urban shrinkage,
- changes in family structure,
- stratification of the society,
- ageing of communities and of the existing housing structure,
- volatile real estate market,
- perception, symbolic identification of the inhabitants with the occupied space,
- rapid changes in urban space evoked by abandoned post-industrial zones,
- insufficient development of the non-profit sector,
- poor quality of some housing estates,
- poor quality of flats, their surroundings,
- problems in the management of the housing tissue.

The papers demonstrate that there are many similarities as well as differences between the problems of post-communist countries and many other European countries.

The following list of twenty seven papers make up the content of the book and represent the objectives of the papers.

1. to examine the direction of changes in the symbolic identification of the space in Katowice, Poland by its inhabitants during the two decades of
social and economic transformation.

2. to give information about Polish awareness of interior space, which is different than the previous monotonous and poor quality spaces of communist Poland.

3. to question the social image of East German estates and to find out if they are seen as 'normal' or 'unwanted.' This paper focuses on the estate of Grünau in Leipzig through a sociological study, which was realized by eight questionnaire surveys between 1979 to 2004.

4. to study the changes in the city center of Tychy in Poland since 1920's. Since there is an ambiguity about the place of center in the city, a sociological research was made to find out people's perceptions about the possible places of center in Tychy.

5. to introduce the challenges focused by the UN-HABITAT Warsaw office, which focused on Eastern Europe, in realizing its mission of promoting socially and environmentally sustainable cities and towns with the goal of providing shelter for all. The paper also presents a draft regional program of the Warsaw office against the problems due to rapid privatization and rapid decentralization.

6. to introduce the relationship between spatial policy, spatial planning, space management, development and space value understanding in society. The paper also presents the 'Rave' Space Project, which has partners from five countries of central and eastern Europe, and their aim to include space value and sustainable spatial development to primary and secondary schools.

7. to present a research, which contains analysis of recreation related needs of housing estates' residents, and to suggest some actions, which require relatively low investments.

8. to describe the concept of local society among young residents in a district of Cracow through participant observation and interviews. However, only abstract of this article is in English.

9. to describe the types of structural problems, which can be seen on mining areas, which share the problem of over exploitation of natural sources in post-communist countries, and to define some solutions in order to avoid these problems.

10. to present the conditions of dramatic social changes, increasing unemployment and decreasing population in the large area of Silesian - Moravian Coal Basin, which is partly in Poland and partly in Czech Republic, due to the serious economic crisis and political upheavals after 1989. The paper also contains a comparison between the two parts of the area.

11. to study the issue of residential property changes and change of value systems within the context of second demographic transition in the inner districts of Gdansk through a literature review and three semi-structured interviews.

12. to consider the nexus between demographic change and inner city housing with the help of an extensive literature review, to look at the situation in East Central European (ECE) cities in relation to this urban research, and to focus on Polish and Czech cities as case studies, and finally to answer the pivotal question of: 'Does demographic change lead to structural shifts of the residential population and housing in the inner city of the case study cities?' This paper is based on an ongoing international research project titled: 'Socio-spatial consequences of demographic change for ECE cities,' which has been carried out since 2006.

13. to argue that shrincage is one urban development path, to focus on the conditions in the east of Germany and its similarities to the recent changes in Eastern Central Europe, to explain the causes and consequences of shrincage through literature review and a long-term sociological (1979-2004) project, which aims to observe and evaluate social and demographic changes in relation to building characteristics and changes of a large housing state called Grünau in Leipzig.

14. to analyze housing consumption and neighbourhood revitalization in the particular environment of inner city of Budapest. The aspect of demand is analyzed through empirical modelling, and attractiveness, quality and housing consumer preferences are investigated. The aspect of supply is studied with the help of a case study and the effects of housing production and relevant market institutions on housing market are investigated. Also the outcomes are compared with other cities to make the evaluation more comprehensive.

15. to acquaint the readers with a large building called: Super-Unit in Katowice, to analyze this building's adaptation to ecological, economic and social needs of society, and to make some sugges-
tions to improve its condition.

16. to show how the isolation and degradation of the housing environment of elderly people can be the context of integration or desintegration of elderly people to society, to discuss the architectural and infrastructural barriers that could hinder moving around for them.

17. to study the changes in the use of grange objects in the Bialy Ladek Valley after the year 1945. However, only the abstract of this article is in English.

18. to present and analyze the post-industrial heritage in Mazovia Region and Warsaw, which are transformed to contain tourism related functions. The research is based on seven case studies, which were conducted in the Institute of Tourism and Recreation AWF in Warsaw between 2005 and 2006.

19. to compare the current socio-economic and demographic conditions of urban renewal in East Germany and Poland on the examples of Leipzig and Poznan.

20. to present the new relationships, which has been formed in the investment process among consumer, architect and developer in last fifteen years in Poland by considering its effects on the space quality and by considering the procedures of data collection and interpretation.

21. to look at the ways, in which people relate to the outside immediate surroundings in the apartment block developments of post-communist Romania, Manastur, Cluj through the lens of territoriality, appropriation and affordances. For this purpose semi-structured in-depth interviews were conducted with eight people and analyzed using Interpretative Phenomenological Analysis.

22. to assess the influence of the socialist period on visual image of an old multi-ethnic town/city (Bialystok in Poland) with the main focus on vernacular urban tissue.

23. to give information about a place of habitation: Tychy in Poland. The paper covers information about the architectural characteristics and processes of housing estates and individual buildings in Tychy.

24. to discuss the spatial problems in Polish post-communist cities, including suburbanization, urban sprawl, new ghettos and gated communities with a focus on ghettos, and to discuss some possibilities of solutions for these problems.

25. to discuss the recent changes in the land use, demographic changes and property development in the inner city of Brno in Czech Republic.

26. to discuss the big housing estates in Poland in terms of the quality of neighbourhood, identity of spaces and the requirement of safety.

27. to discuss the 'Western patterns for the Polish transition.' However, this article has no information in English.

The most important merit of the book is to give a good idea about the past and current environmental conditions in post-communist countries. Most of the papers contain professionally carried out and well presented research.

The book is illustrated in black and white. There are 45 tables or graphics to express research results, 18 drawings or maps, and 92 photographs. Most of the papers are well illustrated.

This book can be useful especially to architects, urban planners and sociologists. Although only three of the twenty seven papers are not in English, the English speaking professionals will be able to fully understand this book.

Dr. Yonca Hurol
Eastern Mediterranean University.
DESIGN STUDIO PEDAGOGY: Horizons for the Future
Ashraf M. Salama & Nicholas Wilkinson (editors).

This groundbreaking book is a new comprehensive round of debate developed in response to the lack of research on design pedagogy. It provides thoughts, ideas, and experiments of design educators of different generations, different academic backgrounds who are teaching and conducting research in different cultural contexts. It probes future universal visions within which the needs of future shapers of the built environment can be conceptualized and the design pedagogy that satisfies those needs can be debated.

Addressing academics, practitioners, graduate students, and those who make decisions about the educational system over twenty contributors remarkably introduce analytical reflections on their positions and experience. Two invited contributions of N. John Habraken and Henry Sanoff offer visionary thoughts on their outstanding experience in design pedagogy and research.

Structured in five chapters, this book introduces theoretical perspectives on design pedagogy and outlines a number of thematic issues that pertain to critical thinking and decision making, cognitive and teaching/learning styles, community, place, and service learning; and the application of digital technologies in studio teaching practices, all articulated in a conscious endeavor toward the betterment of the built environment.
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