

**Department of Landscape
The University of Sheffield**

RESEARCH SYMPOSIUM 26 JANUARY 2012

Room 13.18
Arts Tower
Western Bank
Sheffield S10 2TN

PROGRAMME

- 9:00** Helen Hoyle, 'Human Happiness And Urban Nature Conservation – Biodiversity: Public Perception Of Designed Urban Plantings In A Warming Climate'
- 9.30** Elisa Olivares, 'Exploring The Potential Of Mexican Crassulaceae For Green Roofs'
- 10.00** Ebru Ersoy, 'An Integrated Approach For Enhancing Connectivity In Urban Areas: In A Case Study Of Sheffield, UK'
- 10.30** COFFEE
- 10.45** Laura Silva, 'Mapping Landscape Functions'
- 11.15** Jingjing Liu, 'Front Gardens As Mirrors Of Attitudes: The Potential Of Front Gardens As An Indicator Of Values To The Environment'
- 11.45** Haejoon Jung, 'Re-Evaluating Scenic Sites In South Korea'
- 12.15** *Yuhan Shao*, 'The Validity Of Landscape Representation: A Comparison Between Visualizations, Models And On-Site Observations In Chinese Resident Area With Different Local Identity'
- 12.45** LUNCH
- 13.30** Mark Lindquist, '(Digital) Landscape Experience: A Multisensory Design Framework'
- 14.00** Israel Legwaila, 'Effects Of Distance On The Attractiveness Of Reclaimed Limestone Quarry Landscapes In England'
- 14.30** Nor Idzwana Mohd Idris, 'Root Dynamics In Urban Landscape Plants And Their Influence On Shoot Morphology'
- 15.00** Melih Bozkurt, 'Children's Experience Of Water In Designed Urban Civic Spaces'
- 15.30** Abdullah N. Addas, 'Value, Meaning And Affordances Of Public Spaces In Jeddah, Saudi Arabia'
- 16.00** Wenzheng Shi, 'Management planning for Urban Landscape Multifunctionality: A comparative case study of green infrastructure in two cities'
- 16.30** Ye Hang, 'Developing New Multi-Layered, Long Flowering Mediterranean Plant Communities For Use In The Warming Cities Of Maritime Western Europe'

ABSTRACTS

VALUE, MEANING AND AFFORDANCES OF PUBLIC SPACES IN JEDDAH, SAUDI ARABIA

Abdullah N. Addas

Supervisor (s): Clare Rishbeth & Anna Jorgensen

Keywords: public spaces, place attachment, Arab culture, Saudi Arabia and Jeddah

This paper examines public spaces in Jeddah, Saudi Arabia and their impact on the needs of people in terms of value, meaning and affordances, as decision makers have mostly failed to consider policies and environmental planning to meet these needs. Many open spaces have caused concern regarding pollution, environmental, educational and social issues, and a clearer strategy could enhance facilities for people that are currently difficult to use and poorly designed. A review of the literature on people's responses to open space design and planning reveals that most studies are based on western culture, and often based in European countries, and although some make reference to Middle East countries, they often fail to identify customs and traditions that are unique to different countries in this region, such as Saudi Arabia (Cybriwsky, 1999; Lynch, 1960)

Therefore, this paper will investigate how incidental and designed public spaces are used by people in Jeddah by exploring place attachment and its impact on shaping values and meanings for all people, and make recommendations for improving the planning and design of public open spaces, so that they meet the needs of people and maintain customs and traditions. This will be achieved by using qualitative and inductive approaches, and a case study methodology to record activities at different times to discover place attachment, shared meaning and responses to specific places, as well as exposing differences between Saudis and migrant. Also, the current professional practice will be evaluated in terms of planning, design and management of open space in Saudi Arabia by focusing on social requirements (Carr et al., 2003).

This paper will concentrate on the implications of social requirements of open space design and management within the context of Jeddah, but the findings from this research could be applied to other Arab and Muslim countries. This study of open spaces in Jeddah is unique, as the lack of sufficient studies in the review of literature exposes a gap in knowledge for landscape architecture

and planning that meets the needs of people in terms of value, meaning and affordances in cities in Saudi Arabia. This study is also important due to rapid urban expansion in the Kingdom, and use of western landscape architecture firms that often lack a clear understanding of the different cultural needs of this society, such as the segregation of gender (Altman and Low, 1992).

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EXPLORING THE POTENTIAL OF MEXICAN CRASSULACEAE FOR GREEN ROOFS

Elisa Olivares

Supervisors: Dr. Nigel Dunnett

Keywords: Green roofs, Crassulaceae, Sedum, plant survival.

Mexico, with its arid and porous soils, has evolved a rich xerophyte flora that remains largely unexplored. The Crassulaceae family alone has over 300 native Mexican species, but fewer than 10 % of these have been exploited for green roofs. This investigation, based both in Mexico City and in Sheffield, explores the green roof potential of these plants using a physiographic selection methodology developed to optimise the screening of successful candidate species. An experiment using 11 Mexican Sedum species is in progress in Mexico City using three substrate depths (50mm, 100mm and 150 mm) over two planting seasons. A year-long screening of 21 taxa in 100 mm

substrate depth is now underway in Sheffield to compare growth, coverage, survival and aesthetics. Preliminary results of this experiment will be presented. Based on the outcomes of this method, the model and criteria for selection can be further refined and extended to other Mexican plant families and zones.

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AN INTEGRATED APPROACH FOR ENHANCING CONNECTIVITY IN URBAN AREAS: IN A CASE STUDY OF SHEFFIELD, THE UK

Ebru Ersoy

Supervisor (s): Anna Jorgensen and Philip H. Warren

Keywords: connectivity, ecological/green networks, landscape structure

Under the influence of urbanisation and land use changes, the structure of landscapes has been changed; therefore, an increasing interest in multi-disciplinary and more integrated approaches have become the part of nature conservation and landscape planning (Jongman and Pungetti, 2004). One important aim in ecological planning is the maintenance of the quality and quantity of landscape mosaics against the serious threats to biodiversity created by urbanisation and human activities. Herein, planned ecological and green networks are important components in enhancing the landscape within the urban environment system, and play a key role in supporting ecological processes and maintaining human well-being by restoring and protecting habitats and biodiversity. Bennett (2004) has described ecological networks as “coherent systems of natural or semi-natural landscape elements configured and managed with the objective of maintaining or restoring ecological functions as a means of conserving biodiversity, besides providing appropriate opportunities for the sustainable use of natural resources”. In order to maintain the continuity among isolated habitat fragments and

conserving biodiversity in urban areas, the potential effective distances between suitable habitat patches needs to be identified. Besides, where it is possible and convenient, those areas are supposed to serve for human movement and enjoyment. However, one of the most important obstacles to enhance the functioning of connectivity routes and maintaining biodiversity is the gap between their intended purpose and application, which may constitute conflicts between landscape pattern and process. Therefore, this study aims to analyse and evaluate current ecological/green networks proposals in Sheffield to identify the functioning of current approaches for different habitats and species and to understand the current situation of existing approaches as a baseline for deriving a new method for improving the landscape connectivity for selected habitats and species as well as the public. Proposal maps and associated documents related to current ecological and green networks in Sheffield have been derived from Wildlife Trust (Living Landscape Proposal), Sheffield City Council (Strategic Green Network and Green Network) and Natural England datasets in terms of their purposes and based on what they mean for biodiversity and public. In order to incorporate, analyse and evaluate the different pieces of data on current approaches Geographical Information Systems (GIS) has been used.

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MAPPING LANDSCAPE FUNCTIONS

Laura Silva

Supervisor (s): Paul Selman, Anna Jorgensen

Keywords: Multifunctionality; landscape functions; functions interactions

Highly valued landscapes are characterised by their distinctiveness, resilience and sustainability. Multifunctional landscapes emerge when landscape functions interact with other functions and drivers, generating synergies and positive feedback loops. When cultural landscapes achieve harmony between functions and socio-economic drivers this leads to valued landscapes. Although valued landscapes cannot be created quickly by individual projects, timely interventions can help to set appropriate “initial conditions” of multifunctionality that can speed up the emergence of valued landscapes.

However, the promotion of multifunctionality is still a challenge for planners. Methods to date have tended to look only at high quality rural landscapes (e.g. Willemen et al. 2008, 2010) or to only demonstrate 'co-location' of functions and not their dynamic interactions (e.g. Mersey Forest 2009). This study aims to assist planners to identify potential landscape functions, e.g. habitat support. The scope of the first stage is to spatially represent and quantify existing landscape functions, using these as the basis for reinforcing and embedding multifunctionality. To fulfil the aim, a systematic literature review followed by assembly of databases accessible to the public domain was conducted. The National Forest Company (NFC) in the East Midlands of England has been selected as a key location for studying multifunctional landscape planning. Representation of landscape functions has been accomplished using ArcGIS9.3. The NFC's own databases were an important source of information, supplemented by other local and national datasets. The results obtained from the first stage of the proposed methodology are twofold: a comprehensive list of landscape functions; and a regional interpretive mapping of selected landscape functions. This initial interpretive mapping will help planners, officers and organizations to perceive the landscape in terms of its underlying functions, and will lay a basis for the second stage of research, which entails practical field mapping to enhance multifunctionality through scientific and social interventions.

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FRONT GARDENS AS MIRRORS OF ATTITUDES: THE POTENTIAL OF FRONT GARDENS AS AN INDICATOR OF VALUES TO THE ENVIRONMENT

Jingjing Liu

Supervisor: Jan Woudstra

Keywords: Front gardens, historical development, values, photographic recording

The premise of this thesis is the assumption that gardens are an important part of personal expression and reveal the values about the environment of their occupiers. Front gardens border the public domain and are thought to be those areas that are revealing of our values. Therefore by concentrating on the front gardens, this thesis will aim to answer the question “Are there ways of reading these values from front gardens?” This question requires a range of research methods: a literature review that reveals the historical context and development of front gardens since the early 16th century as an important feature of low-rise housing, and a chronology of features that have been traditionally included in them; a photographic survey that aims to record images of contemporary front gardens whilst collecting historical photos, so that these can be compared to reveal changes in trends and values with regard to front gardens; an environmental psychological survey base on questionnaires aims to reveal social and environmental significance of front gardens; an in-depth interview aims, which aims to achieve a profound understanding of decision making process about gardens and gardening with regard to front gardens.

This information will be analysed as evidence regarding attitudes towards the environment and significant social and environmental factors that are thought to be of importance to future housing and planning projects.

This presentation however will concentrate on exploring photography as a means to record front gardens. Photography is generally believed to be a true optical representation of the scenes recorded (Elkins, 2006) and photography has becoming increasingly popular method of survey in other disciplines. It will be explored here therefore how photography might be used to inform the general aims of the thesis and provide an ability to extract certain values in a efficient manner, but also how photographs might be used for further analysis. Practical and ethical issues are discussed.

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RE-EVALUATING SCENIC SITES IN SOUTH KOREA

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Supervisor (s): Jan Woudstra, Carys Swanwick

Keywords: Scenic Sites; Landscape Designation; Landscape Values

Scenic Sites, which represent both aesthetic values of nature and general lifestyle of mankind, have shaped national identity in Korea. Since the designation of Scenic Sites in South Korea, implemented under the Cultural Properties Protection Act which came into effect in 1962, there have been 82 designated sites (in 2011). However this was not due to gradual increase, but there has been a marked interest over the past 8 years when a total of 75 sites were designated. The increase in interest has however not been matched by a systematic approach that would have been needed to designate sites and there is inconsistency and a lack of transparency in the way they are designated. As designation imposes certain restrictions and provides obligations, there have been legal challenges by landowners, as well as conflicts between bureaucrats and other stakeholders. As a result the value and meaning of these Scenic Sites is being questioned, additionally the management and maintenance of these sites does not appear to respond to historic values. There is therefore an urgent need to review and redefine the notion of Scenic Sites. This study has two ultimate aims; to provide a comprehensive assessment of historic and present-day values with respect of Scenic Sites in Korea based on historic resources and in-depth interviews with related experts; to provide a coherent policy and practice framework for conservation of Scenic Sites based on reviewing modern international cases on landscape designation. To accomplish these two aims, this study takes a holistic and interdisciplinary approach that may contribute in a practical way to designation, management and utilization of Scenic Sites in Korea.

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(DIGITAL) LANDSCAPE EXPERIENCE: A MULTISENSORY DESIGN FRAMEWORK

Mark Lindquist

Supervisor (s): Professor Eckart Lange, Professor Jian Kang

Keywords: Landscape experience, Virtual reality, Digital design, Perception

Designing and communicating through visualization is the norm in spatial design professions. Visualizing ideas and concepts are the designer's medium and currency; sketches, model making and computer graphics are primarily used to explore possibilities and to convey physical implications of design proposals. A rationale for privileging the visual over other senses for design investigation and communication has been presented citing the primacy of the visual system in human perception. While this visual primacy somewhat justifies such privileging, this paper offers that a mutually exclusive relationship need not exist. Further, visual communication, the expertise of the landscape architect, conveys more explicit knowledge, while tacit knowledge, which is essential for landscape experience, is often of more significance to the user. The experiential importance of landscape by the user is identified in the European Landscape Convention, as well as, a growing body of recent research that additionally criticizes expert led approaches. In addition, some end-users may not engage with the environment primarily through visual means. There is evidence that the implicit, less tangible understanding required for experiential perception does not rely on the primacy of visual communication. With visual primacy and experts being criticized, where does this place the landscape architect, the visual communication expert?

This paper explores the visual/experiential dilemma currently facing the discipline of landscape architecture. Multi-sensory landscape experience will be contextualized within current research and theory and the potential contribution of digital media to an experiential design and planning process that engages a variety of users and decision-makers is evaluated. The paper ends with a discussion of the implications for educators, practitioners and the public of a digitally mediated, experience-oriented design and planning process.

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EFFECTS OF DISTANCE ON THE ATTRACTIVENESS OF RECLAIMED LIMESTONE QUARRY LANDSCAPES IN ENGLAND

Israel Legwaila

Supervisors: Prof E. Lange and Dr. J. Cripps

Key words: Reclaimed quarries, Visual quality, Distance, reclamation, Reclaimed limestone quarry

Because of their magnitude, quarries are usual visible from near to distant viewpoints (Ramos et al 2006). The extent of their visibility depends of the size of the quarry, its contrast with the surrounding landscape, and its location relative to other features in the landscape. All these are affected by the distance from which the quarries are viewed.

This study assessed the relationship between distance and the attractiveness of reclaimed limestone quarry landscapes. Empirical studies have been conducted to establish the type of relationships that occur between distance and perceived visual qualities of landscapes. Different landscape dimensions have been used in these studies, eliciting different types of relationships (Buhyoff & Wellman 1980; Hull & Bishop 1988; Hull and Buhyoff 1983). However there has not been agreement on any single relationship function between distance and the different landscape dimensions studied.

In this study the landscape dimensions studied were reclaimed limestone quarries. Ten different scenarios of reclaimed quarries were simulated by applying different reclamation techniques and different land uses. From these simulations, fifty still images were captured at different distances along an established transect. Ten videos were also recorded along the same transect. These were used in a survey of seventy (70) students from the University of Sheffield. The images were presented through an overhead projector to each individual student at time. Students were asked to rate the quarry landscapes on their attractiveness.

The results were divided into three groups based on the students' field of study. The groups were: Landscape students (twenty seven students from the Landscape Department); Built environment students (twenty three students from Engineering, Architecture and Town and Regional Planning departments) and Others (twenty students from all other disciplines). This was done in order to establish if there was any difference in how the groups perceived the landscapes.

It was found that distance had a non-monotonic, quadratic, concave down functional relationship with attractiveness of reclaimed limestone quarry landscapes. These results were significant at $p < 0.05$. The relationship can best be explained by theories of arousal potential and visual complexity of

landscapes (Hull & Buhyoff 1983). Arousal potential is related to the level of complexity of landscapes. Thus, as distance decreases, the complexity of a reclaimed quarry becomes more evident, which increases the arousal potential of the quarry. The results of the study will be discussed based on these theories.

It was also found that there was no significant difference in how participants from different academic backgrounds perceived the attractiveness of the quarry landscapes. This is consistent with the findings by Daniel and Boster (1976) and Lange (2001).

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ROOT DYNAMICS IN URBAN LANDSCAPE PLANTS AND THEIR INFLUENCE ON SHOOT MORPHOLOGY

Nor Idzwana Mohd Idris
Supervisor: Dr. Ross William Cameron

Keywords: Plant stress, Root adaptation, Root to shoot communication, Urban landscape plants

Roots are very much the 'hidden half' of any plant, and no more so that when grown as landscape plants in the urban environment. Root systems are expected to 'perform' in a variety of difficult and stressful environments, whether they are constrained in containers of limited volume, planted into shallow soils with restricted water / nutrient availability (e.g. green roofs) or even expected to grow in the absence of soil (e.g. within hydroponic systems commonly used in green facades, Domurath and Schroeder, 2009). Perhaps there is no better fitting example of our blasé attitude to plant roots than the cabling mania of the 1980-90s when infrastructure engineers would bore and tunnel under our city pavements to install the latest IT technology and then wonder why street trees began to suffer (Grabosky et al., 2001; Jim, 2003). With this action, major changes in soil structure will implicate in poor roots performance where roots are restricted to spread and aeration was poor (Jim, 1998). This lack of appreciation regarding root systems in general is coupled with an incomplete understanding of how root development might influence shoot growth and morphology in urban landscape plants. The aim of this thesis is to provide a better understanding of how root development influences the aesthetic character of landscape plants, particularly in terms of early shoot / branch formation and subsequent morphology. Using a limited range of model ornamental species, plant root systems will be exposed to scenarios typical of the urban environment (limited volume, restricted water availability, high bulk density etc.) in an attempt to identify i. modifications in root behaviour, and ii secondly, effects on shoot development. Rather than regarding the influence of the urban environment as purely detrimental to root development, the project will aim to test the hypothesis that appropriate management/ manipulation of root systems can actually be used to increase the aesthetic character or functionality of ornamental plants (Blanusa et al., 2007; Cameron et al., 2006).

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CHILDREN'S EXPERIENCE OF WATER IN DESIGNED URBAN CIVIC SPACES.

Melih Bozkurt

Supervisors: Helen Woolley, Nicola Dempsey

Keywords: Urban Civic Space, Water Features, Children, Adults and Professionals perception

Urban population is increasing all around the world. Ninety percent of population live in urban areas in European Union countries (Pickett and Cadenasso, 2008). In addition 80 percent of the population live in cities and towns with a population of more than 10 000 people (Thompson, 2002). All those people's recreational, social, educational and health needs are rely on open spaces in urban areas. Due to fact that those spaces are precious to city people for improving quality of their lives.

The role of landscape architect is creating quality spaces for people's social, recreational needs and provides them escape points in city environment. However, many open spaces can fail to function correctly and become empty spaces easily due to lack of designers' empathy or understanding of children's experience. It is beneficial to understand children's experience and perception of civic spaces for creating functional urban open spaces for children.

This research explorer urban children's experience of water features in designed urban civic spaces in Sheffield city using qualitative research methodology to understand issues and benefits deeply rather than providing some numeric data. On the other hand this research examines different evaluation techniques of different researchers in the literature and develop theoretical framework for evaluation of children's water experience in urban open spaces. This research uses series of designed civic spaces in Sheffield city centre and Sheffield urban area, some of which specifically created for children. The research finding will help to understand the diversity of user groups in terms of their age, ethnicity, backgrounds and gender, the children's perception and experience of water features and how children's experience of these spaces facilitated or controlled by adults and professionals. Therefore research findings will have major implications for city council, planners and designers of urban open spaces to improve children's benefit from water features in urban landscapes.

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HUMAN HAPPINESS AND URBAN NATURE CONSERVATION – BIODIVERSITY: PUBLIC PERCEPTION OF DESIGNED URBAN PLANTINGS IN A WARMING CLIMATE

Helen Hoyle

Supervisors: Professor James Hitchmough, Dr Anna Jorgensen

Keywords: public perception; preference; designed plant communities; invertebrate diversity

This research investigates public reaction to a range of designed landscapes; including woodlands, shrubs and herbaceous perennials, focusing on whether or not designed plant communities that look similar to semi – natural plant communities are more preferred than vegetation looking dissimilar to semi – natural communities. It assesses whether or not there is an overlap between designed vegetation that is most preferred by people and vegetation that by virtue of its structure and composition provides an excellent habitat for the conservation of native invertebrate diversity.

That urban greenspace is capable of promoting psychological and physical well - being contributing to human happiness has been well documented in diverse locations and culturally different populations, (Ulrich et al. 1991). Urban greenspace provides 'intangible ecosystem services' (Vejre et al. 2010) linked to human perception such as aesthetics, recreational values and cultural heritage as well as 'tangible benefits'. Linked to physical processes, the latter include wildlife habitats, clean water, air and filter and buffer effects. Probably the greatest yet least publicised tangible benefit of designed landscapes is the massive contribution they make to urban- nature conservation biodiversity. Designed vegetation is often taxonomically hyper – diverse in terms of plant components, (>900 species/ha in Sheffield – see Smith et al.2006) and also supports rich communities of native invertebrates (Owen, 1991, Gaston et al, 2004).

Public preferences will be investigated initially via structured questionnaires on site using 9 'typologies' for each of 3 communities representing different combinations of the 2 variables; structural and character/taxonomic similarity to semi natural vegetation. These will be conducted in two locations for each typology, and in Spring, Summer, and Autumn at each site. Questionnaires will be followed by in depth interviews with a smaller sub set of the sample questioned. A video sequence of the site 'experiences' will also be shown to a wider audience allowing remote responses to the same designed plant

communities. An index of 'value for invertebrates' will be devised and applied to each typology, based on both an extensive literature review of relevant material and interviews with experts in the field.

The findings of the study will inform future design decisions by both ecological and consumer driven desire.

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MANAGEMENT PLANNING FOR URBAN LANDSCAPE MULTIFUNCTIONALITY: A COMPARATIVE CASE STUDY OF GREEN INFRASTRUCTURE IN TWO CITIES

Wenzheng Shi

Supervisor (s): Helen Woolley & Paul Selman

Keywords: Landscape management, Green Infrastructure, Multifunctionality

The research purpose is concerns the management of green infrastructure in practices. It is using a paired comparison case study to investigating a way for enhancing landscape multifunctionality in urban green spaces through improved management planning.

Landscape management planning plays a key role to improve quality of urban environment and enhance green infrastructure. The conception of multifunctionality has been considered as one important notion in green infrastructure to enhancing quality of urban green spaces and has been

particularly impact in Europe (Fry, 2001, Ling et al., 2003, Selman, 2002, 2009). However, most literatures on green infrastructure emphasises its spatial planning aspects, but usually gives less attention to landscape management aspects.

There is study systematic improvement to management practice can enhance the effectiveness of existing green infrastructure. Management practice is then understood implying the management planning to allow policy makers, scientists and stakeholders identifying at a glance those functions of the green spaces.

This research is using systematic reviews to understanding the related research and management background. On the other hand, GIS method will be used to explain and show what kind of land uses and multifunctionality are present. Much existing research in measuring and comparing multifunctionality relies on Geographic Information System (GIS) to map the urban green spaces, often attempt to measuring different functions towards green spaces (Alonso et al., 2007, Kong et al., 2007, Lee et al., 1999, Peccol et al., 1996, Xiang, 1996). Based on GIS maps, proposals and plans will be produced and tested in different cases cities by organised interview with different groups. For understanding implementation and monitor in management process, a feedback is necessary. The feedback method is approaches to using qualitative interviews which is greater interest in the interviewee's views (Bryman, 2004). In this feedback method, the interviewees are considered related landscape planners, managers and implementation participants to knowing how implement and monitor their management policies and actions.

The national and local policy frameworks for green spaces in the UK and China are being critically compared. Based on the mapping exercise and policy analysis, a representative set of management practices and specifications have been selected for more detailed analysis. The extent to which these documents contain multifunctional management approaches is being undertaken by evaluating them in relation to the multifunctionality (CLERE model) (Barber, 2005). According to this study, it is clear that there are significant differences in practice between the two cities, although many of their needs are similar. One output of the research is contributed to 'knowledge exchange' as a way of improving policy and practice.

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DEVELOPING NEW MULTI-LAYERED, LONG FLOWERING MEDITERRANEAN PLANT COMMUNITIES FOR USE IN THE WARMING CITIES OF MARITIME WESTERN EUROPE

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Supervisor: Professor James Hitchmough

Keywords: Mediterranean plant community; geophytes; Renosterveld; Fynbos; naturalistic planting; Western Europe

This research investigates the feasibility of creating this type of naturalistic vegetation using a wide range of winter-growing species from the Western Cape Region of South Africa in Northern England, including geophytes and forbs. The first of the experiments has looked at plant hardiness commenced in autumn 2011 in the Sheffield Botanical Gardens. It was designed as a randomized block planting experiment with two levels of cold, involving 4 replicates of each level of cold with a split-pot design. The test level of cold involves no winter protection (i.e. exposed to the ambient environment). The second level of cold involves reduced minima, achieved by placing insulated

transparent “screen” over 4 of the blocks when there was a frost. Rainfall that fell on the covered plots was applied weekly to ensure the less cold plots were subject to the same level of precipitation. Temperatures at 1cm above the pots and in the centre of the pots were recorded every half-hour via “Tiny Tag” temperature sensors to provide a data base against which to interpret winter hardiness. Tolerant of winter cold will be assessed through assessing seedling survival; with a count of seedlings in each pot prior to the first frost days in 2011 and subsequent counts to assess mortality. Thus far the plants have experienced 6 frost nights to January 11th 2012, with minimum temperature down to -2°C. Most of the geophyte species appear frost hardy at these temperatures and need no special winter protection. The most cold sensitive species to date have been: *Freesia fergusoniae*, *Ornithogalum thyrsoides*, *Syncarpha vestita*, *Crassula* spp., *Aristea* spp. and *Brunsvigia bosmaniae*, and were the first species to show senescence and foliage loss. *Gazania heterochaeta*, *Heterolepis aliena*, *Tripteris oppositifolia* and *Podalyria leipoldtii* were affected by root rot pathogens, which may be caused by too much rainfall outside or too compacted compost. Most forbs need 48h smoke treatment to get good germination. *Bulbinella* seedlings were recorded as extremely attractive to slugs and snails early in the growing season, when the first new and tender leaves may be eaten away completely.

The main experiment in the PhD is a microcosm competition experiment involves 15 combinations, containing both forb/dwarf shrub species and geophyte species, and will be set up in March 2012 to test competitions between different species on the basis of life form, canopy architecture and canopy height, which mirror the form of actual designed vegetation in practice. Meanwhile, the author’s MA experiment is still under observation and will be maintained as a long term source of comparative data. Most plants survived from winter 2010 and summer 2011 re-emerged in the autumn 2011. The second year’s over-winter mortality of these 21 geophytes will be assessed in March 2012.

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THE VALIDITY OF LANDSCAPE REPRESENTATION

A COMPARISON BETWEEN VISUALIZATIONS, MODELS AND ON-SITE OBSERVATIONS IN CHINESE RESIDENT AREA WITH DIFFERENT LOCAL IDENTITY

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Supervisor (s): Professor Eckart Lange and Dr. Kevin Thwaites

Key words: Landscape representation, visualization, model, local identity

In the past 20 years significant urban developments in China have been created everywhere and very fast. More and more residential areas with different local identity have been built. Landscape representation through visualizations and models have been used successfully communicate various aspects of planning and design projects to show the place, especially for the future representation and play an increasingly important role as decision making tools to experts, the public viewers, clients, stakeholders and society in general. As they promised limited future concept, there might be a different, or even a no, in the real world. It needs to be studied in great detail. As so far, there is a lack of detailed guidance available for those creating visualizations and models and currently no method of analyzing the accuracy of them published. This study comparative analysis a selection of visualizations and models with on-site observation of Chinese residential projects and reveals reoccurring patterns of inconsistencies in the depiction of content elements of local identity. Aim to find the extent to which degree of visualizations and models achieved in the real world and establish a new framework for landscape assessment. This research assist planners and designers to do the job properly there is a discussion of validity issues and some guidelines for appropriate and effective landscape representation to reach honest communication, in both production techniques and presentation to clients, stakeholders and the public viewer. There is scope for more in depth landscape assessment of a larger could contribute to future guideline discussions.

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