Visual Landscape Character Classification

Dr Lars Brabyn
GIS Lecturer
Department of Geography
University of Waikato
Larsb@waikato.ac.nz
Landscape is a multi billion dollar resource. Landscapes are an important part of the tourism industry and contribute to the quality of life.
The impact of tourism development on landscape values is highly controversial costing millions of dollars in Environmental Planning court hearings.
Landscapes can be modified and their value decreased through modifications.

World’s Highest Bridge The Millau Viaduct in southern France
What actually is landscape:

• the appearance of the land
• the environment perceived, especially visually perceived
• the spectacle presented by the countryside
• an overall impression presented by the land, and involves generalisation and combination.
Different environmental values require different information systems

National spatial data sets associated with different environment values:

• Biodiversity and Ecology – Landcover2 and LENZ
• Soil and Geology – Land Resource Inventory and NZ Soil Classification
• Water and Atmosphere – Rivers Classification, Lakes?
• Landscape – NZ Landscape Classification - 2006
• Heritage – NZ Archaeological Association Site Recording Scheme.
Landscape Values

Aesthetic
Historical
Spiritual
Sense of place / Identity / Iconic
Naturalness
Wilderness and remoteness
Economic

These values are influenced by rarity and uniqueness (distinctiveness), and visibility (use).
Landscape values are subjective and need to be evaluated through structured consultation with local communities.

Psychophysical assessment using photographs and focus groups are methods used to assess aesthetic and cultural values.

Consultation can be considerably improved if objective information on the landscapes are provided and used to inform discussion, and help people articulate and identify subjective landscape values.

GIS has a role in representing objective information to assist consultation and representing subjective information resulting from consultation.
Landscape Information Requirements

Descriptive Information
• Landform, landcover, infrastructure, water.
• Dominant landuse
• Visibility from, roads, urban areas, walking tracks
• Visibility of sea, lakes, and rivers
• Catchment boundaries
• Archaeological and heritage sites
• Current Protection Status – district plan zones, reserves, parks, historic sites etc
Landscape Information Requirements

Landscape Management Information
• Landscape classification
• Landscape management units
• Recreation Opportunity Spectrum (DOC has already developed this and will want this included)
• Visual absorption capacity
Landscape Information Requirements

Evaluation Information
• General public’s visual landscape preferences
• Sensitive landscapes – highly visible.
• Important landscape features for identity, science, and culture. Also includes iconic landscape features.
• Rarity and uniqueness
• Naturalness
• GDP contribution
Landscapes need to be managed as a resource.

We need an inventory of what we have.

We need to conduct research on the impacts of different landscape modifications.

We need information on people's perception – what do people value – landscape quality.

For research to be efficient we need to communicate and compare research results.

A landscape classification assists communication and provides an inventory.

How would botanist cope without a plant classification.
Specific Landscape Classification Criteria

- The classification should incorporate components of landform, vegetation, naturalness, and water.
- The classes should be based on the general public's perception of the above attributes.
- The classes should be based on an overall impression of the above attributes in an area from a distance, and involved generalisation and combination.
- The classes should recognise that landscapes surround and are experienced from a multiple of geometrical perspectives that can be obtained from movement and exploration.
General Classification Criteria

• The classes must be exhaustive and mutually exclusive, i.e. all geographical individuals must be classified, but no individual must fall into more than one class.

• It needs to be easily understood and applied.

• It has to produce repeatable results that are independent of the researcher.

• It has to be hierarchical; to cope with needs at different levels of resolution in different areas.

• It has to be sufficiently flexible for new interests and tasks to be met from a modified, rather than a completely new, classification.
We can interpret the landscape from hard copy maps and GIS layers.
Landcover

- Urban
- Mine or Dump
- Coastal Sand
- Horticulture
- High Producing Grassland
- Low Producing Grassland
- Exotic Forest
- Exotic Scrub
- Indigenous Forest
- Indigenous Scrub
- Permanent Snow and Ice
- Alpine Rock
- Tussock
- Sub Alpine Scrub
- Freshwater wetland
- Saltwater wetland
- River
- Lake
- Sea

Influence of Water

- Estuarine
- Enclosed Sea
- Open Ocean
- Small Coastal Island
- Large Coastal Island
- Large Lake
- Medium Size Lake
- Small Lake
- Island in Lake
- River
- Land
Infrastructure
Landscape 3 – Experiential / Human / Biophysical Classification

Landform

Landcover

Water

Infrastructure

Dominant Landcover

Water View
The NZ Landscape Classification

A GIS database that provides a national inventory of landscape character that can be analysed at the local, regional and national scales.
Application 1: GIS Query and Similar Landscapes Identification

High Hill, Low Producing Grassland, Dominated by Developed Agriculture, View of Open Ocean
Application 2: Descriptive Reports

Canterbury Coastal Landscapes (sample)

Hills / Grassland / Highway / Open Ocean

AREA = 5225 ha  % of NZ = 59

Mountains / Indigenous forest / Remote / Open Ocean

AREA = 775 ha  % of NZ = 3

Mountains / Indigenous forest / Highway / Open Ocean

AREA = 4650 ha  % of NZ = 48
Application 3: Identifying Rare Natural Landscapes – both regionally and nationally

Natural Landscapes in the Otago Conservancy that are rare at the regional scale- < 5,000ha in region

Natural Landscapes in the Otago Conservancy that are rare at the NZ scale- < 10,000ha in NZ
Application 4: Identifying Regionally Unique Natural Landscapes

(greater than 25% of landscape type found in the region)

Natural Landscapes in the Otago Conservancy that are unique to the Otago Conservancy

Natural Landscapes in the Wellington Conservancy that are unique to the Wellington Conservancy
Application 5: Local analysis of Track Experience using visibility analysis
Landscapes Experienced on the Milford Track
Landscape is immensely important to tourism in NZ and many other locations around the world.

The challenge for Geographers and GI Scientists is to represent the values associated with landscapes so that appropriate landuse decisions are made.