Alternative Design for New Development Areas in Hong Kong

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Objectives

• The project aims to consider natural processes, such as urban forestry and river restoration in the New Development Areas in Hong Kong.
Background

First Iteration – The Why Questions

Study Area and the People of the Place
Representation – How should the study area be described?

- Two North Development Areas (NDAs) designated by Hong Kong Government
- Currently, rural villages along Shek Sheung River between two highly-populated cities, Hong Kong and Shenzhen
- 612 ha to accommodate a total population of about 176,900
- To build 59,900 flats with social and cultural facilities
- To provide about 37,700 employment opportunities
- To provide commercial, research and development areas for the future
- To improve transport network
- To preserve river valley

Process – How does the study area operate?

- Population growth
- Urbanization
- Abandonment of farmland
- Fragmentation of green space
Evaluation – Is the current study area work well?

- Declining water quality in river
- Diminishing forest areas
- Fragmented green space
- Non-productive farms
- Country park areas considered to be the back garden of Hong Kong

Change – How might the study area be altered?

- Sustainable planning – green infrastructure, e.g., urban forestry & river restoration
- Affordable housing
- Multi-functional landscape – agriculture as well as amenity
- Provide alternatives
- Engage stakeholders
- Learning from other cities
Impact – What differences might the changes cause?

- Amenity spaces enjoyed by citizens
- Connectivity of green space
- Preserve cultural heritage

Decision – How should the study area be changed?

- Decision model taking into account of local stakeholders’ opinions
- Get away from the status-quo from government-led development
Methodology
Second Iteration – The How Questions

Decision – Personal, cultural and institutional knowledge of the decision makers

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<th>Question</th>
<th>Initial Thoughts</th>
<th>Follow-up</th>
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<td>What are the objectives and requirements of the decision makers and thus of the Geodesign study?</td>
<td>Involve stakeholders ignored in the government’s consultation and identify groups with clear visions and opinions</td>
<td>Select a group for in-depth interview</td>
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Impact – Metrics to assess benefits and costs of potential changes

Question: What, how much, where, when and to whom are the impacts seen as “good” vs “bad”?

Initial Thoughts: Combine the objectives of the government and the stakeholders

Follow-up: Convert the findings from the stakeholders' interview into clear objectives

Change – From present state to the best possible future

Questions: Which strategy should the project choose for change model?

Initial Thoughts: Using a rule-based model and develop a set of rules on sustainable development based on case study on other cities

Follow-up: Translate rules into CityEngine script and create a number of alternatives based on the rules
Evaluation – Compare current state and possible future states

**Question:** What are their spatial, temporal, qualitative and quantitative metrics?

**Initial Thoughts:**
Build up a scorecard to compare the attractiveness of various alternatives

**Follow-up:** Case study on sustainable approach in other cities to build up metrics in scorecard

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**Process – Assess impacts of proposed changes**

**Questions:** How shall the impacts be summarized and visualized?

**Initial Thoughts:** Using sliders in CityEngine to stimulate the impacts of proposed changes

**Follow-up:** Learn CityEngine scripting for creating sliders on density, greenspace, etc
Represent – identify the minimum amount of data needed

**Question**
Which data are needed? For which geography? At what spatial scale? At which classification? For which times? From which sources? At which cost? In which mode of representation

**Initial Thoughts**
Data in scale 1:25,000; using CityEngine to create 3D-visualization for feedback from stakeholders

**Follow-up**
Collect GIS data relating to the sit

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**Timeline**

- **May – Jun 18**: Contact Stakeholders, Conduct Case Study, Learn Scripting CityEngine
  - **6 Weeks**

- **Jun – Sep 18**: GIS Data Collection, Converting Rules into Script, Generate alternatives
  - **12 Weeks**

- **Sep – Oct 18**: Score alternatives, Feedback from stakeholders
  - **4 Weeks**

- **Oct – Nov 18**: Final Presentation
  - **4 Weeks**
Anticipated Results

• A set of alternative plans addressing the community need to be compared with the Government’s plan
• Identify the People of the Place and collect their opinions from new development in Hong Kong
• Convert the People’s opinion into a set of rules which is then translated into a CityEngine script
• A scorecard with quantifiable metrics to compare alternative plans
• 3D-visualization based on CityEngine