Procedural modelling of the buildings

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Procedural modelling

What is the procedural modelling?

• Original object or its part is replced other object.

Flake is an example of the procedural modelling.



- Key words: grammar, alphabet, rewritting rules and axiom.
- An example of several iterations
 - Grammar consists of alphabet: **a** a **b** and rewritting rules: $a \rightarrow ab \ a \ b \rightarrow a$.



What is utilization of the procedual modelling?

- Models of structure of the nature and landscape.
- Models of plants.
- Models of buildings.



Procedural modelling of the buildings

- Where is modelling of the building useful?
 - Urban planning, computer games, films etc.
- Differences between modelling of the nature and modelling of the building.
 - Dissimiliar interpretation of iterations.
 - Using diffrent grammar.
 - Diffrent geometrical interpretation of alphabet.
- Buildings are modelled by CGA grammar.

CGA grammar

- Primary it is modelled solid model and then are modelled details of facade.
- Finally it is modelled roof.
- CGA use elemental shape for modelling
 - cylinder
 - cube
 - block
 - pyramid
- CGA is based on basic rule:
 - Basic split rule
 - Repeat rule
 - Split components rule

Example of basic rules



- Each of element or component is defined by border points, symbol of interpretation and citizien(F, W and D).
- Sometimes there is prblem with accurate splitting.

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Problem of the algorythm

Occlusion of objects or elements.

- Kind of occlusion:
 - Partial
 - Complete
- Solution of the problem:
 - Requestions or testting of occlussion by requests and object three.
 - Snap links.

Example of occlusion and snap links





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Diversity of the buildings

• Several basic kinds of platform:

• L, H, U, T.

- Diffrent types of the buildings due to location and human density in the city:
 - Family houses, administrative buildings etc.
- Random parameters of the buildings.
 - location of the pivot, scalling, height of thu building, number of floors or windows etc.



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Object tree



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