ArcGIS 3D Analyst: Working with 3D Analyst and CityEngine

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Why 3D GIS?
Because our world is 3D

• **Improve understanding**
  3D is easy for everyone to understand

• **Better communication**
  3D makes it easier to articulate ideas

• **Solve 3D problems**
  Some spatial problems can only be solved in 3D
3D GIS Features

- Multiscale 3D Models
- 3D Geodesign
- ArcGIS for 3D Cities
- Share 3D scenes
- Native lidar support
- Integrated 3D
- Surface modeling
- 3D Analysis
Share your 3D Scenes

Share your ArcScene Project as a Web Scene
“Clip and Share”

Supporting Defense, Local Government, Scientists, Urban Planners, Facilities Managers, Geologists, Architects, Landscape Planners…
GP: Export to 3D Web Scene
Demo

Teapot Dome

Philadelphia Visibility / Shadows
ArcScene Layer Types

- Feature layer (point, line, polygon and multipatch geometries)
  - Layer extrusion or 3D symbology
- Raster layer
- TIN layer

- Note: LAS dataset and Graphics layer cannot be exported to 3ws.
ArcScene document properties

- Scene coordinate system
- Area of Interest (AOI)
- Bookmarks
- Group Layers
- Vertical exaggeration
Creating 3D objects in ArcGIS

- **In ArcGIS 10.1**
  - Via symbology (eg: point symbols)
  - Using GP tools (eg: Buffer 3D)
  - Importing external models (eg: COLLADA)

- **In ArcGIS 10.2**
  - Using pre-authored CityEngine rule packages

- **In CityEngine**
  - Using pre-authored CityEngine rules
  - Writing / adjusting new rules
  - Interactively editing new 3D models

- **In ArcGIS Pro**
  - Use CityEngine rule packages as ‘advanced symbology’
GP: Features From CityEngine Rules
Supported Layer Types

• At 10.2, polygon and multipatches only
  - Buildings (real and imagined)
  - Zoning regulations
  - Cartographic symbols
  - …

• Line support (eg: for streets) is coming later
• Until then, export features from CityEngine
Demo
ArcScene & CityEngine

Generating 3D content using a Rule Package
- …for existing features
- …as part of an editing / design effort
- …with updated textures
- …by adjusting / authoring the rule logic
ArcGIS Pro

Procedural symbols (from CityEngine)
Demo

ArcGIS Pro

Displaying 3D content using a Rule Package
- ...for existing features
- ...configuring to a custom data model
- ...as part of an in-progress GIS work
SUMMARY: Working with CE Rules (RPK’s) in ArcGIS

• Author CE rules inside CityEngine
  - Where possible, author rules against the expected data model
  - Optionally, export new 3D content directly from CityEngine

• Share CE rules with others
  - Via ArcGIS Online, or as RPK files on disk
  - Limit access to the underlying logic, as needed

• Create new 3D content via the ‘Features from CE Rules’ GP Tool
  - Available with GP - in ArcScene, ArcGlobe, and ArcMap

• Symbolize features directly inside ArcGIS Pro
  - Configure rule parameters to link them to feature attributes
Creating new models by sketching and rules
- ...interactive push/pull of the 3D shape
- ...add procedural textures using a CE rule
- ...export as a 3D feature
Thank you...

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