Interactive Egypt

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3D Saqqara Project Goals:

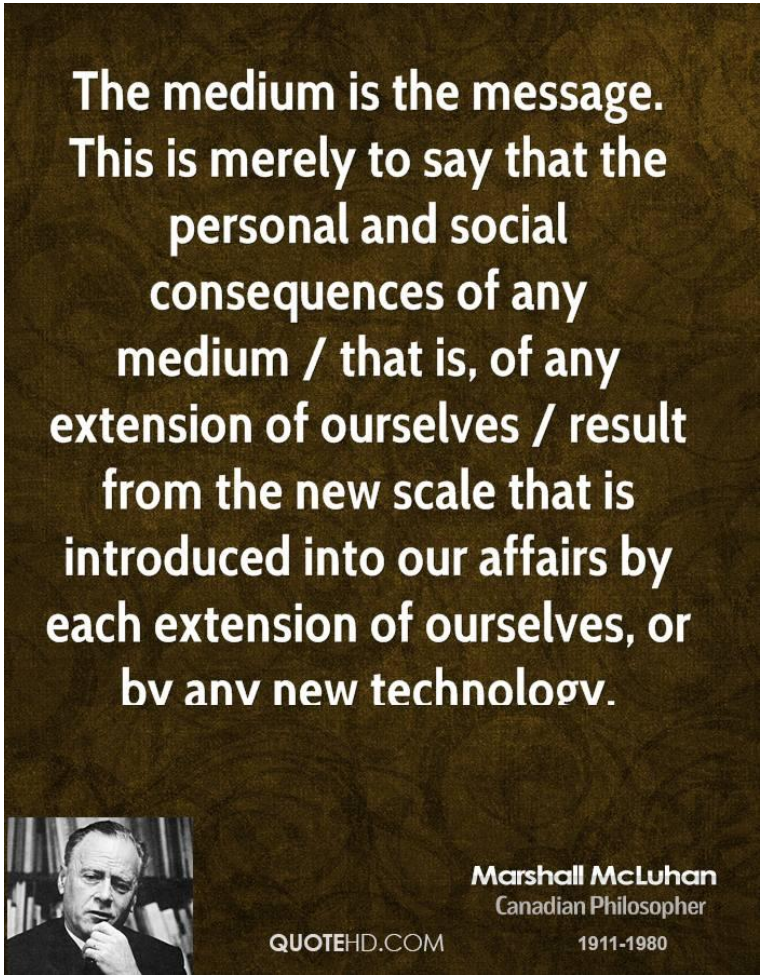
- Create a model that shows uncertainty
- Utilize both metadata and paradata
- Focus on a single, specific time period
- Demonstrate potential viewpoints/perspectives
- Devise a better and more intuitive workflow
- Consider VR vs AR applications for content usage

Uncertainty: The Art of Speculation

- **Computer Science = Fuzzy Systems**
- **Includes statistical variations or spread, errors and differences, minimum-maximum range values, noisy or missing data.**
- **Uncertainty describes the absence of information for some reason**
  - **Imprecision: the existence of a certain feature can be assumed, but not in detail**
  - **Incompleteness: certain information is unavailable**
- **Ability to reference established techniques in the arts for creating speculative representations**

Conceptual Analysis

“When we see a landscape we situate ourselves in it. When we see a representation of the past we situate ourselves in history.”
- John Berger, 1972



Concerns for Representing Uncertainty

- Photorealistic images tend to leave their viewers with the impression that the objects depicted actually exist
- Visualization technology forces clear cut decisions
- Usually no support is made to confirm or check consistency to design decisions
- Softwares are lacking in appropriate methods & tools
- Cannot cure our total lack of knowledge archeological past
- Current forms often show our indecisiveness concerning an array of given possibilities
- Can only aspire a plausible antiquity, not the real one
- Inherent creation of cultural context, based on interpretative assumptions and choices

Table 1. Design decisions

Type of reason	Explanation
excavation	artifacts that have been actually found
physical constraints	assuming that the buildings in question stood for a long time without falling apart, one can draw conclusions about their structural properties
period features	certain data may be concluded by knowing how objects were constructed in certain periods of history, like the Romanesque or Baroque periods
analogies ★	elements that can be concluded logically from other buildings of this period
deductions ★	information derived from other data within this model

Paradata = "Learned Guessing" or "Specialist's Intuition"

Problems with the 2D GIS visualisation

- Visibility : Examination of complex, multi-phased archaeological sites is hampered by the limitations of 2D visibility in GISs.
- Human experience : Changing perception of space through time and human movement through space, has not been sufficiently explored in 2D GIS
- Uninteresting : 2D GIS seems uninteresting to general people
- Realism : The sites are commonly found in an advanced state of degradation which difficult the professional/expert analysis.

Solutions

- 3D visualisation ; The demonstration of the relationship between cultural spaces and visibility can help to more effectively investigated in 3D environments. It can offer new insights on monumental architecture at the sites
- VR : Virtual reality can make general people more interested in those sites by making them accessible to non technical people.
- AR : Incorporation virtual models in AR/AV systems can be used to promote the scientific participation of the general public in culture, history or archaeology.

Paradat: What is it?

- “evaluative, analytical, deductive, interpretative and creative decisions made in the course of computer-based visualization.”

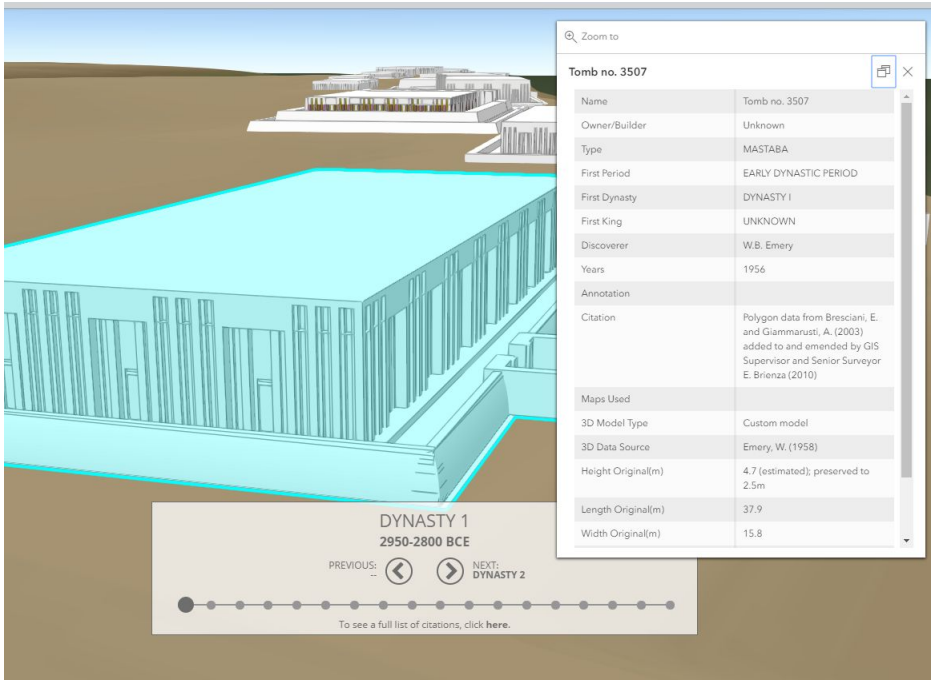
Paradat: What is it?

All data about how a digital visualisation was created:

- Scholarly Research
- Technology Used
- Process of Interpreting Sources
- Relation to Other Research

Makes the process of visualization transparent, replicable, and correctable

How is this currently done?



Suggested proposal areas and workflow I.e. conversation time

1. Timeline project (continuous vs discrete)
    a. Too complicated and time demanding, would need hand holding and
    b. No clear dates recorded, dates according to julian calendar are uncertain
    c. There isn't a spreadsheet for time on monuments and objects
2. **Visulizing uncerintiy**
    a. **complicated as a whole but doable with one or two time slices**
        i. **Previously discussed :)**
        ii. **Would rather have a refined chunk vs more time slices**
3. GPS markers and views
    a. Possible project, but conversation shifted leaned towards uncertainty

what is the most important data?

Display data

Always important to have the name and the date of the model

For this case specifically:

- name of the dynasty
- Name of king's reign
- Name of the building (king teddy)
- How it is placed in the world

Uncertainty data?

Represented as a quantifiable data (from 1 - 5 or A scale)
Ex: Sea levels as a measure of height
Hypothetical designs and metadata
Condsring:
Models, elevation, color or transparency ..etc

Audience

General public or specific(egyptologists, scholars, education) , she is open to either one depending on how the project shapes out

Goal: proof of concept

Project view: first person or overview or both

Problems faced with workflow:

Based on our discussion:

- Had to run through 4 programs
- Different views for publishing and viewing platforms
- Wants an end result that doesn't require a technical person, easily viewed

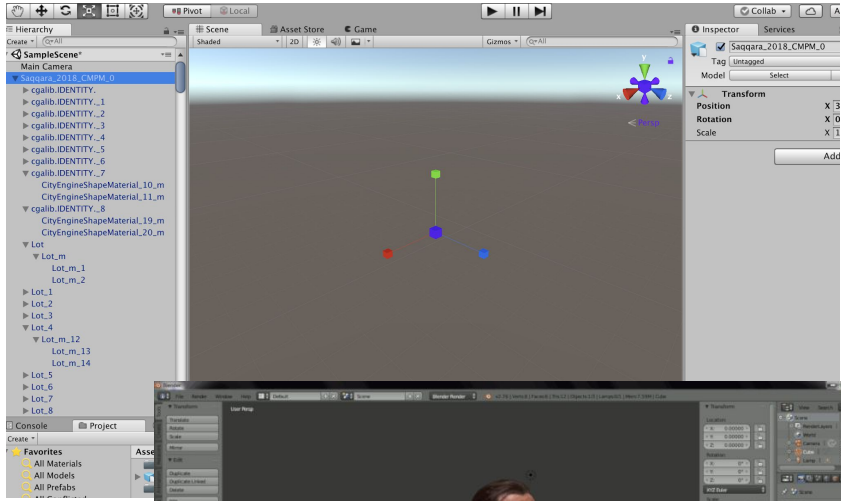
main tools and assets

- Model Assets
  - Models for a specific time period (TBD) - in fbx and obj formats
  - Materials (different textures for uncertainty)
  - Needed: excel/ Cvs file for data (if we need to present textual data)
- Tools:
  - **Engine: Unity**
  - Unreal (TBD)
  - **Blender**
  - Cityengine (TBD)
  - Cvs format generated from excel sheet

The problem?

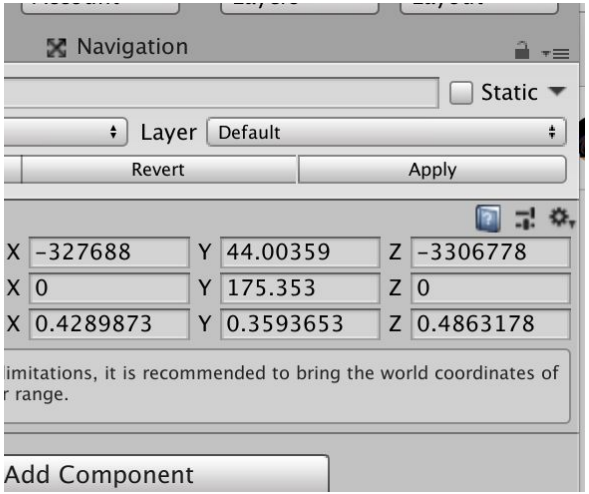
From our conversation: Workflow mentioned issues: (from cityengine to unity)

- She mentioned that there was an issue with importing files
- The hierarchy was there but the models were not visible (in scene)
- Checked for normals and materials



So what was the problem?

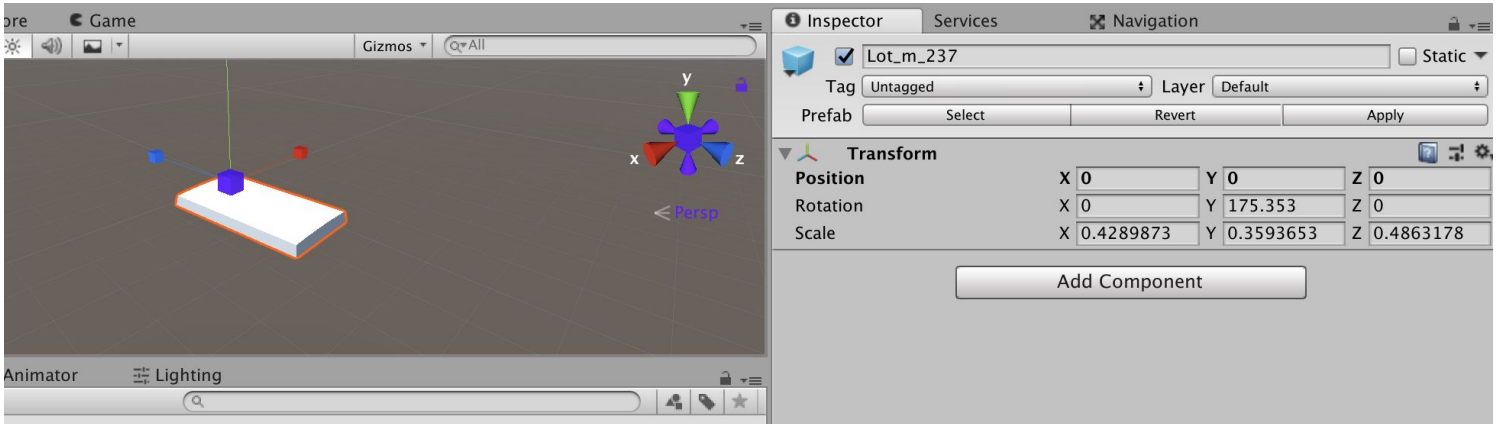
The problem? ‘Lot’ objects



Models that are defined as lots turned out to have a simple solution --- the x and y imported coordinates were to far for unity’s scene to handle.
Can’t scroll that far in unity - relative positioning option

This is for each “lot”item - 234 pieces

- Maybe it was mapped to real world coordinates and attempted to translate it literally



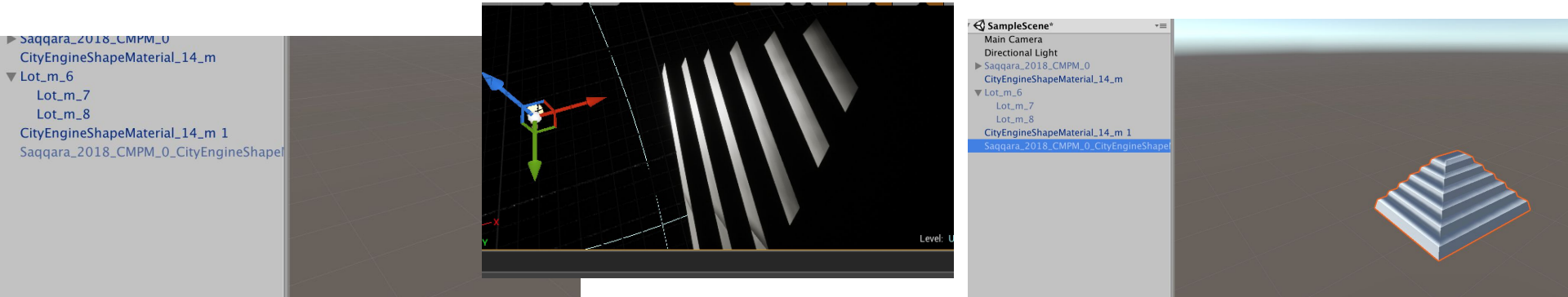
The problem?

The other type of model tagged as “identity” (around 9 models)

Assumption: unity doesn’t allow nested imports from city engine with that specific material _ based on a forum - within unity itself, would remain invisible

Workaround - used external engine (unreal)to re import the mode, separate it l and export it to unity - it worked but would be a hassle

The problem with this approach is we would lose relative positioning



Next steps

Next steps - possible solution

- Get original city engine file or original models (pre cityengine) for the models that had these issues
- Shifting to unreal but issue with unfamiliarity and time
- Requesting data points, separate objects rather than one chunk
    - Procedurally mapping them in by reading the data of of a file rather than one big object
    - Come up with a relative map rather than real or too large xy coordinate
- Stretch goal: having data modifiable in viewer, loading text file but modifiable in viewer(app) as a solution to multiple approaches - (currently hierarchical model)

Needed assets and extra data:

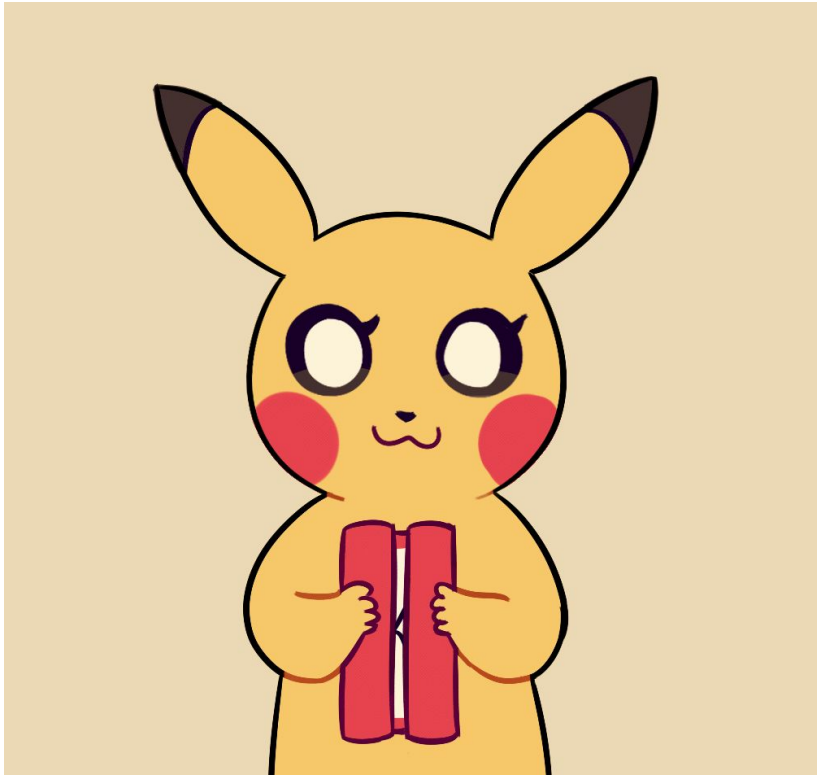
- Excel or cvs file with x,y coordinates names (of the data mentioned earlier)
- Elevation data
- Original file

Your thoughts ?

Propose the use of 3 models as a focus bit rather than all 230+ pieces

Restructure the models in blender

Thank you for your time!



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