Credit: Carleton University

Georeferencing and digitizing scanned maps or aerial images in Google Earth

This help guide outlines the process to georeference (geographically place on the surface of the earth) a scanned map or aerial image and digitize features from it in Google Earth Pro, a desktop software.

If you are interested in using ArcGIS Online, the [University of Toronto's Map & Data Library has an illustrated guide](#).
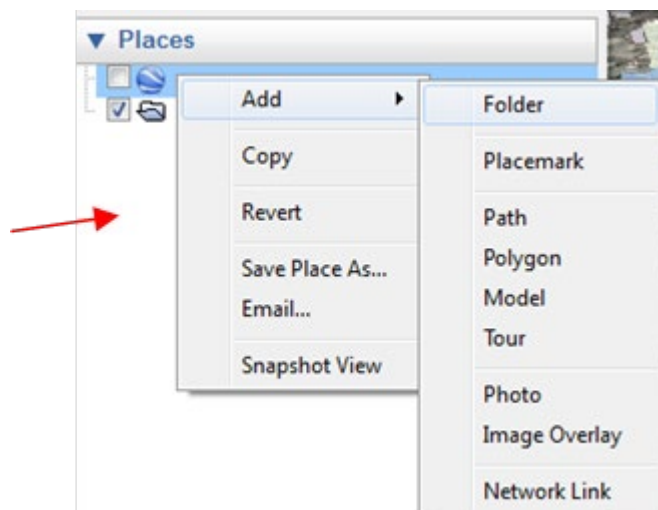
Please note that it is not possible (since July 2023) to add images to the browser-based version of Google Earth.

Georeferencing and digitizing scanned maps in Google Earth

Requirements: [Google Earth Pro](#) (desktop program) installed and an image file (e.g.: JPEG, TIFF) of an historical map or an aerial image. Google Earth will be used as a backdrop to overlay and digitize historical maps.
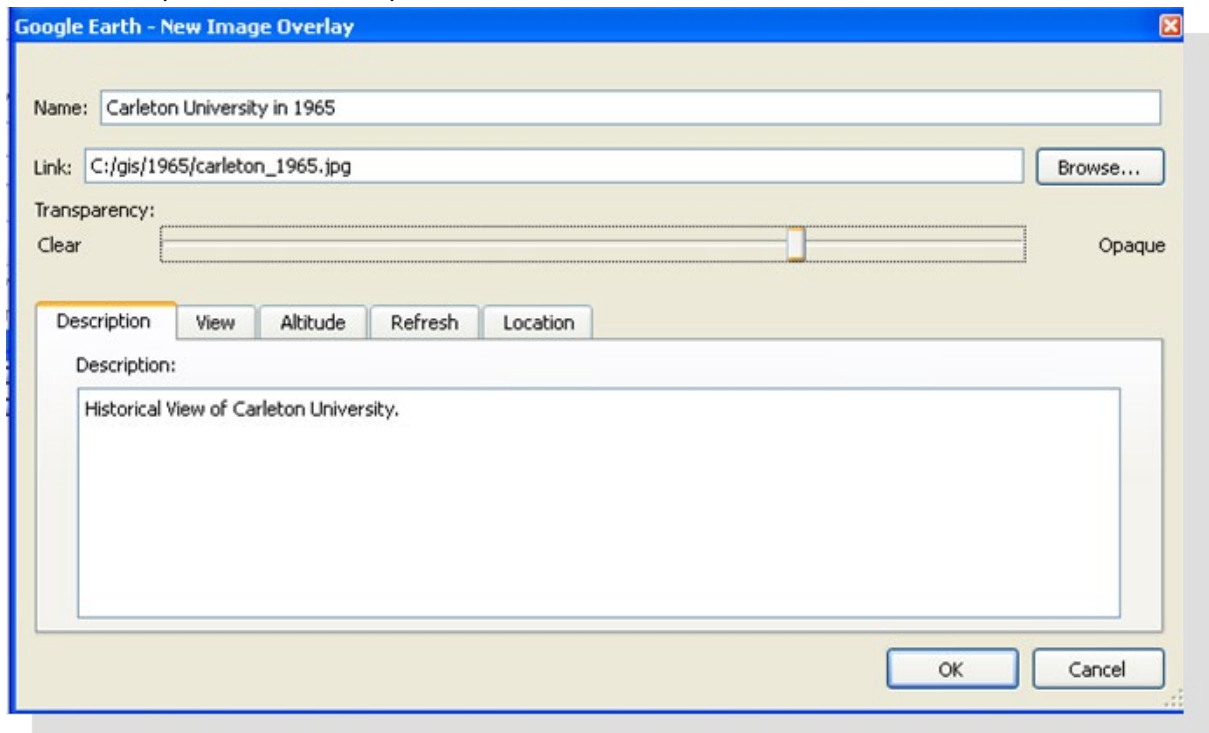
Georeferencing a scanned map

1. Save a scanned and digitized map to your local computer drive and familiarize yourself with its geographical location. For example, is it a neighbourhood in a city, or an entire country, or somewhere in between? You can use an [Ontario road map](#) as an example for this exercise

2. Open Google Earth and zoom into the rough location of the map.

3. In *Places* in the table of contents (left pane) in Google Earth interface, right-click *My Places* and select Add > Folder. Provide a folder name and click Enter.

4. With the new folder selected, click the Add Image Overlay tool found in the menu bar.

5. In the dialogue box that appears, enter a descriptive name in the *Name* field.

6. In the *Link* field, enter the URL address of an image to overlay or use the Browse button to locate the image locally (i.e. the image that you selected in step 1).
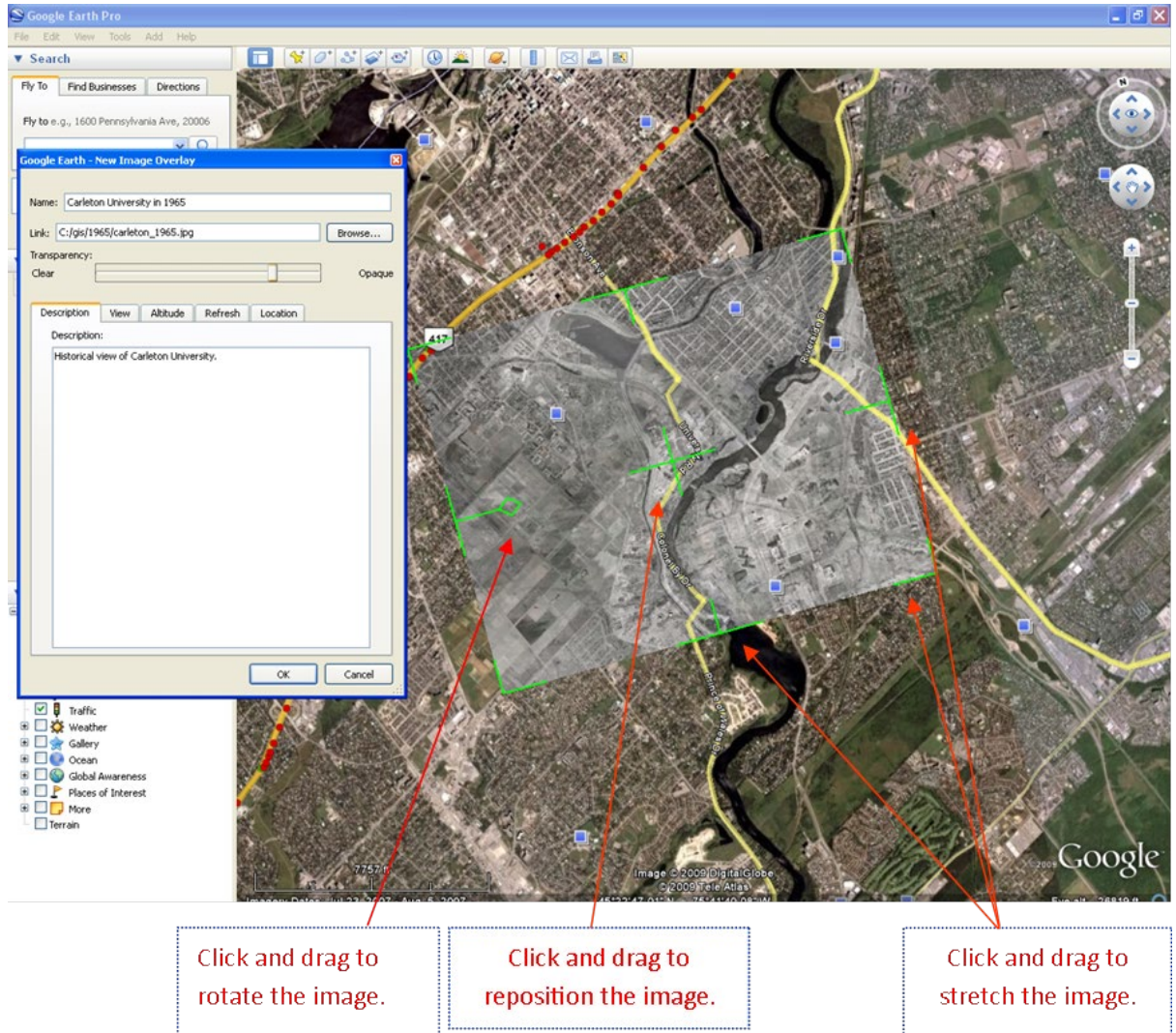
Change the transparency of the image by sliding the tab to make the Google imagery visible beneath the overlay.
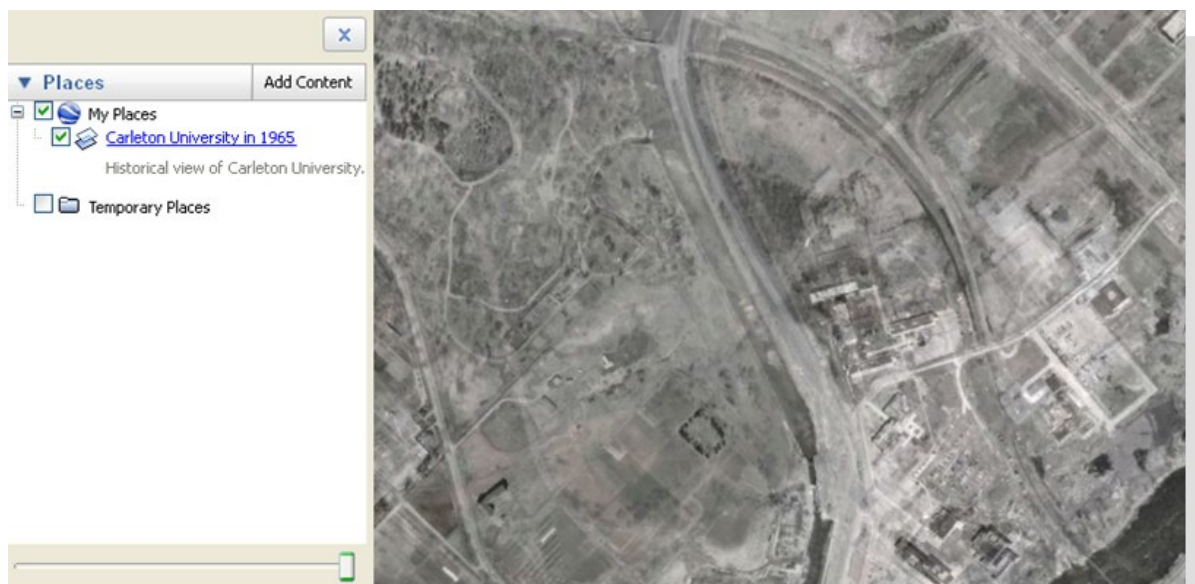
7. Add a description in the *Description* field.

8. Move the New Image Overlay window aside to see the Google Earth Viewer. **Do not close the window or you will be unable to edit the map.** (If you did close it, you can open it again by right-clicking the new image in your folder and selecting Properties.)

9. Use the green diamond to rotate, the green cross to reposition, and the green handles to stretch the overlay until it matches the imagery beneath. This may take a bit (or a lot) of

tweaking to match up the detail, and it may never match up perfectly.

Click and drag to rotate the image.

Click and drag to reposition the image.

Click and drag to stretch the image.

10. When the adjustments are complete to your satisfaction, click OK. The image can be seen in the Google Earth viewer and is listed in the new folder under My Places.
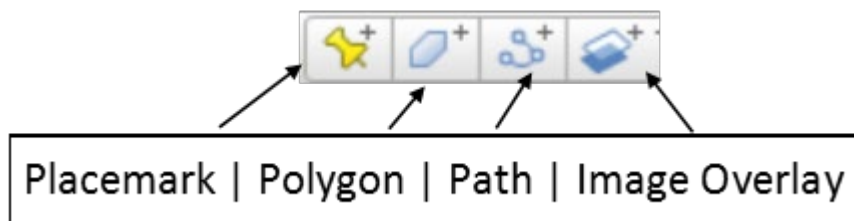
11. The image transparency can be modified on-the-fly by selecting the image from the list then dragging the slider below the Places listing.
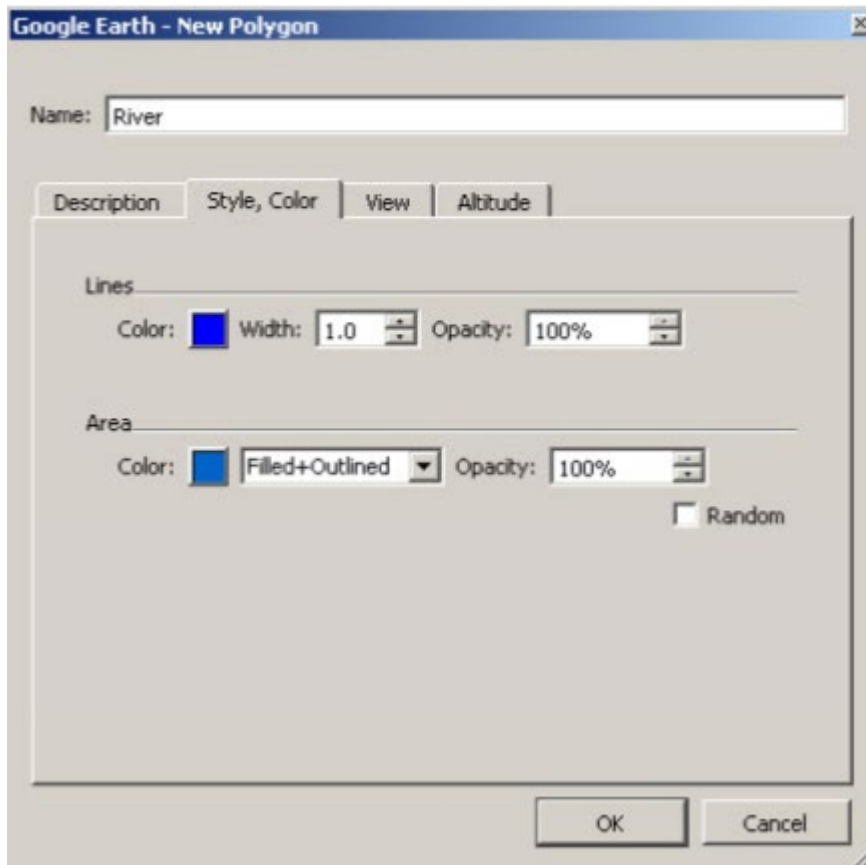
Digitizing features from a georeferenced map

You can create custom features and store them in the folder that was previously created. The mapping tools at the top of the viewer offer custom feature creation such as points (placemark), lines (path) & polygons.

Adding a path or polygon

1. To add a line, click the *Add Path* tool. The New Path dialogue box appears and the cursor has changed to a path drawing tool.

Placemark | Polygon | Path | Image Overlay

2. Click along the path on the imagery to create a line (as if you are creating the dots for a connect-the-dots puzzle), double-clicking when it is complete.

3. Enter a name and description in the respective fields in the dialogue box.

4. To change the colour, select the *Style, Color* tab, click the Color box, and select a new colour. Click OK.

5. The width of the line can also be changed at this point by entering a new line thickness.

6. When satisfied with your changes, click OK to return to the map viewer. **You can always adjust the properties by right-clicking the path name in the table of contents and selecting *Properties* from the menu.

7. To add a polygon shape, click the polygon drawing tool then click the corners of the polygon in succession around the edges, double-clicking to finish the shape.

8. Again, colour and line thickness may be customized as well as the fill colour, and a name and description should be added in the New Polygon dialogue box.

9. Like paths and polygons, a point (called Placemarks in Google Earth) can be added and the symbol style, size, and colour customized.

Sharing your work

Any features or layers that were added to your custom folder can be saved in KML or KMZ (zipped KML) format (native to Google) and shared with the world.

1. To create a KMZ file, right-click on the folder you created earlier and select *Save Place As...*

2. Give the file an appropriate name and click *Save*. This file can be sent via email as an attachment, added to a website as a download link, or saved locally for future reference.

To view a KMZ or KML file, run Google Earth and select *File > Open*. Navigate to the file of interest and open it. The layers will appear under *Places > Temporary Places*.