



Traherne Digital Collator v3.0.0 – user instructions

Introduction

The Traherne Digital Collator is software for identifying variants between different copies of the same printed text. It is designed for comparing copies which are substantially similar in terms of content and type-setting, but where there may be some differences. This includes collating variants between different states of the same edition. Although specifically designed for identifying variants in letterpress, it can also be used to detect variant states of intaglio prints, relief woodcuts, and even photographs.

The Traherne Digital Collator compares digital images of two copies of a text and produces visualisations to help users spot variants. It is a digital equivalent of mechanical and optical methods of collation. It improves the speed and accuracy of collation by automatically aligning images so that they can be easily compared, providing different visualisations so that users can choose the most helpful ones, and relieving researchers from the physical strains of optical collation. It makes it easier to collect evidence (such as changes in the position of type indicating resetting) which other techniques can struggle to identify. It is a conservation-friendly method of collation because no special handling or physical treatment of books is needed.

The Traherne Digital Collator can be used either in the library alongside the copies being collated, or remotely. Because it uses digital images, collation can if necessary be conducted or repeated without physical access to a copy. Moreover, results and visualisations can be saved and shared with others.

Using the collator

Images

The Traherne Digital Collator compares images of different copies of the same text, so the first stage in using the software is to obtain a set of images of each of the copies to be compared. The software works best with the JPEG or PNG files, although TIFF files are also supported. If working with PDFs, the first step is to convert them to image files.

It will normally be most convenient to save images from each copy in a separate folder. Images should be named so that, when ordered alphanumerically, they are in page order. When you start collating, the software will work through the images in this order.

For early modern books, images will be stored sequentially if they are named using the following protocol:

1A01r_[library]_[shelfmark], 1A01v_[library]_[shelfmark], 1A02r_[library]_[shelfmark]...

This protocol will make it easy to work through collation of multiple copies on a page-by-page basis. It is not, however, obligatory and other systems may work better in different circumstances.

If you are producing your own images, remember that many cameras and associated software make it possible to automatically save images to a specified folder and to name images as they are taken in a form specified by the user. Making use of this functionality to implement a protocol like that described above can substantially reduce the time needed to photograph a copy and file the images.

If producing images, treat the volume just as you would if you were reading it. No special handling is needed, and nothing should be done which risks damaging a book. In particular, there is no need to force books open. The software is specifically designed for use with images which have been taken at an angle and with photographs of curved pages. That said, the software performs best with photographs of flat pages. So far as is possible without risking damage to the book in any way, photograph pages flat.

Save images with the correct orientation (i.e. the top of the page at the top of the image).

As far as possible, avoid having fingers, book snakes, or other objects appear in your photographs. Keep them as far away as possible from the printed areas of the page and try to keep the margins of pages empty.

Starting collation

- To start using the collator, open the Collator software and click 'Load Base'.
- Find the folder in which the images of the base copy (the reference copy against which copies are being collated) are stored. Select the images showing all the pages to be collated and press 'Open'. It is most efficient to load all the pages you want to collate in a single session in one go.
- To collate the base copy with a single comparison copy, click 'Load Comp'.
- Find the folder in which the images of the comparison copy are stored. Select the set of images showing the pages to be collated and press 'Open'.

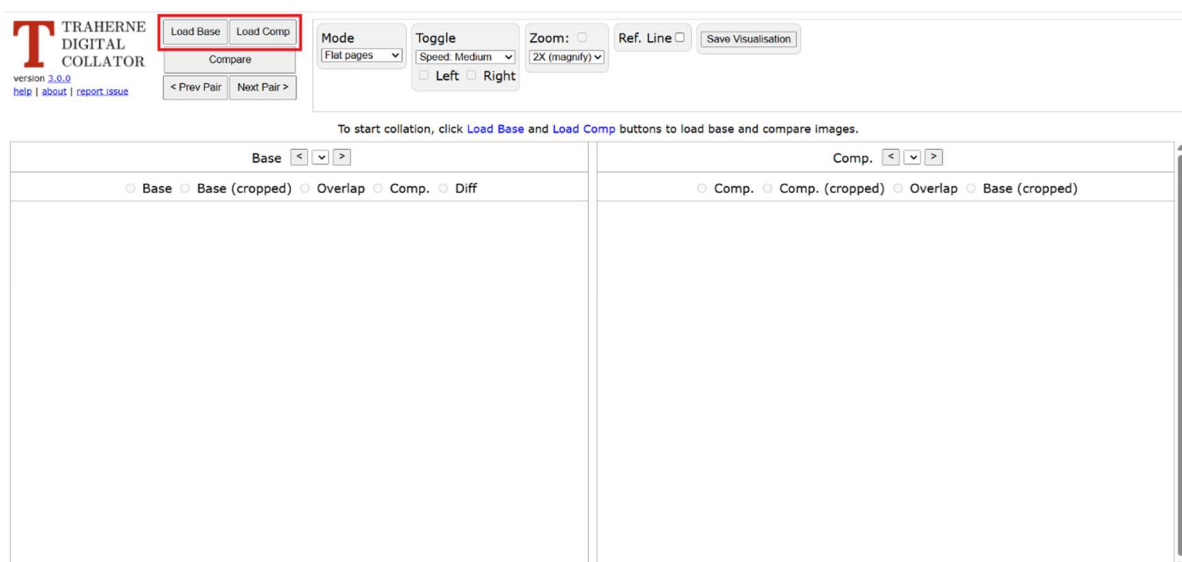


Figure 1 The 'Load Base' and 'Load Comp' buttons

- Use the drop-down arrows next to 'Base' and 'Comp' to load the first page of the base copy in the left-hand panel and the first page of the first comparison copy in the right-hand panel. Then press 'Compare'.

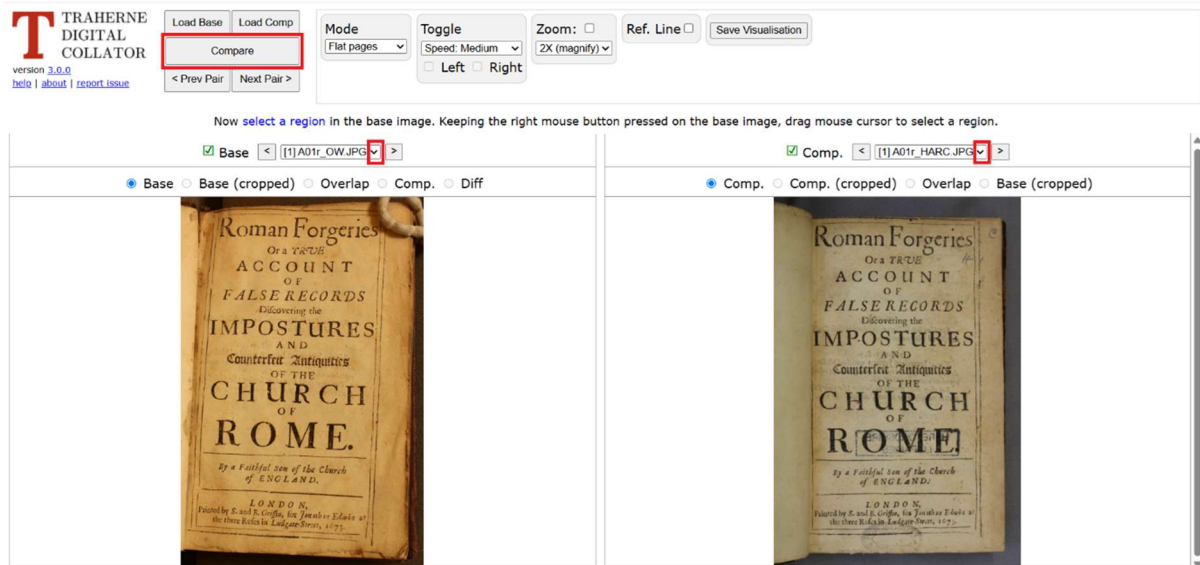


Figure 2 Use the drop-down arrows to load the correct photographs, then press compare

- Wait whilst the software automatically matches the images.
- When the images have been processed, two images will appear side by side. On the left is the base copy. On the right is the comparison copy, which the software has now adjusted to align it with the base copy.

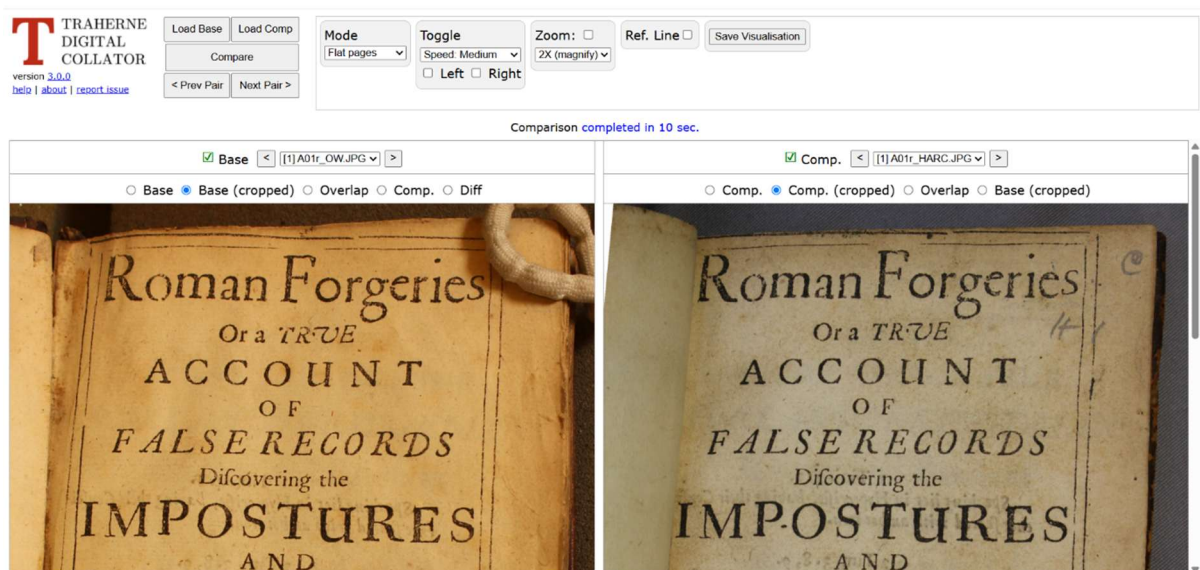


Figure 3 The base and comparison copies after 'Compare' has completed

- The software is able to correct for page curvature when comparing images. However, this function is by default switched off because it takes longer to process images when it is enabled. To switch it on, open the drop down menu labelled 'Mode'. Choose 'Curved pages'. Then click the 'Compare' button again and wait for the images to be processed. To turn it off, open the drop down menu and choose 'Flat pages'.
- When 'Curved pages' is selected, The Traherne Collator uses powerful image warping algorithms. Sometimes they don't work properly and the results are distorted. If this happens, try again. Press 'Compare' again to generate another result. If necessary, repeat until you have a

successful comparison. Sometimes, booksnakes or fingers in the margins of pages can cause local distortions. Selecting only the text block for comparison can help address this problem.

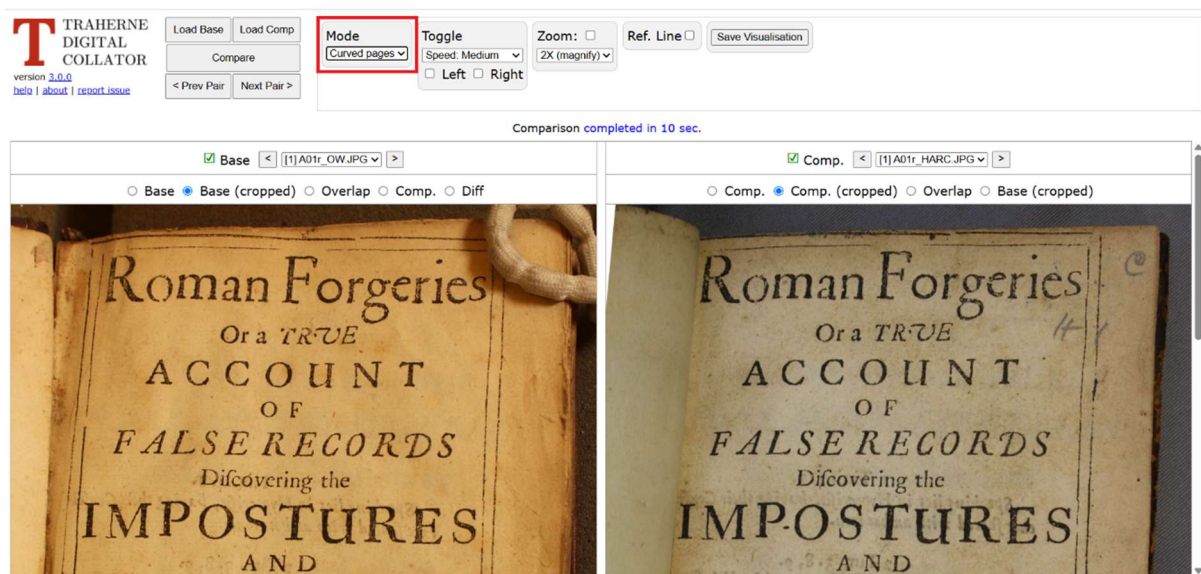


Figure 4 Use the drop-down menu to switch between flat pages and curved pages.

- To compare an area of a page rather than a whole page, load your base and comparison images. Then select the part of the base copy to be collated by left clicking, holding down the left mouse button, and drawing a box over the portion of the page to be collated. When you release the left mouse button, a yellow rectangle will be visible on the base copy. Redraw the box if you want to change it. When you have selected the correct area, press 'Compare'.

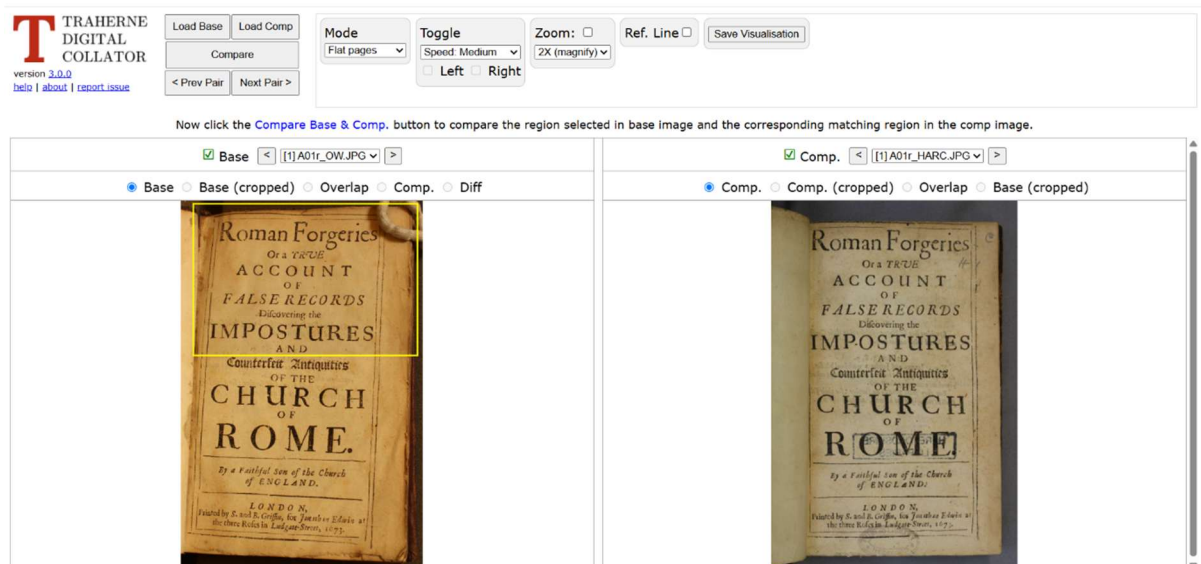


Figure 5 An area of a page selected for comparison.

Identifying variants

- Directly above each image are a row of buttons for selecting different visualisations. Choose from amongst these to find visualisations which are most helpful for identifying variants. Two options lay the images on top of each other:

- 'Diff' shows the two copies laid on top of each other with the base copy in blue and the comparison copy in red.
- 'Overlap' shows semi-transparent images of both copies laid on top of each other.

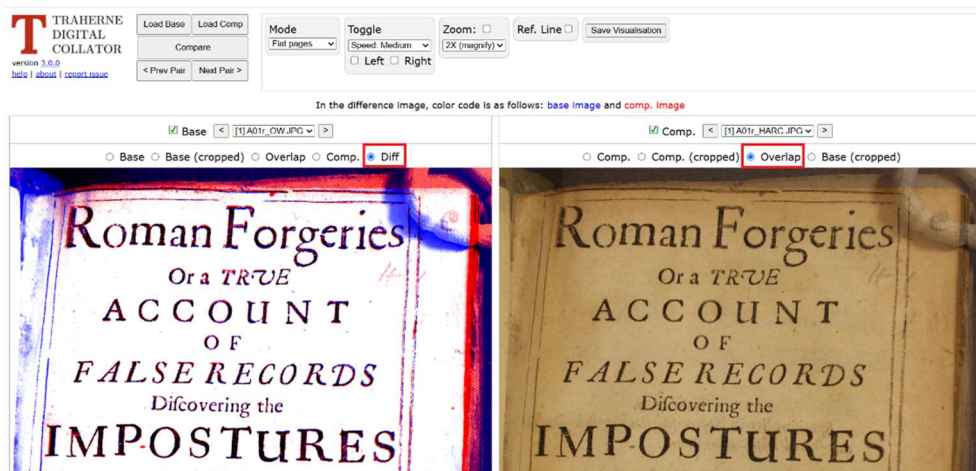


Figure 6 The 'Diff' (left) and 'Overlap' (right) visualisations

- You can also select versions of each image on its own:
 - 'Base' shows the original image of the base copy
 - 'Comp.' shows the original image of the comparison copy
 - 'Base (cropped)' shows the part of the image of the base copy used for comparison, which will be the whole image if no specific part of it was selected
 - 'Comp. (cropped)' shows the image of the comparison copy after it has been transformed by the 'Compare' function.
- Use the 'Toggle' function for a visualisation which alternates a pair of images. First use the buttons described above to choose the pair of images you wish to toggle between with one image in the left panel, and the other in the right. Normally, you will want 'Base (cropped)' in the left panel and 'Comp. (cropped)' in the right panel. Note that toggle will not work if either 'Base' or 'Comp.' are selected. Then under 'Toggle' at the top of the window select either 'Left' or 'Right'. 'Left' will show the two images toggling in the left panel, 'Right.' will show the two images toggling in the right panel.
- To alter the speed at which the images toggle open the drop down menu under 'Toggle' and choose the appropriate setting. To stop toggling, click to uncheck the 'Left' and 'Right' boxes.

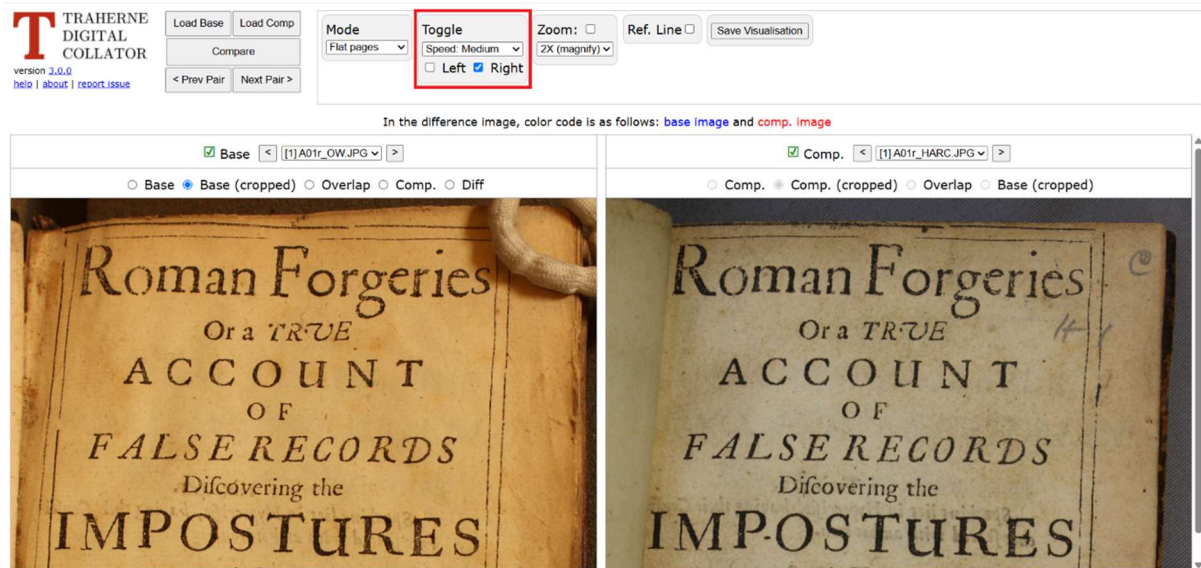


Figure 7 Controls for the 'Toggle' function

Magnifying areas and adding reference lines

- To magnify part of either image, click the 'Zoom' box. Moving the cursor over either panel will now magnify the area the cursor is pointed at. To freeze the zoomed region, click the left mouse button when zoom is active; to unfreeze, click the left mouse button again. To switch off, uncheck the box. To adjust the degree of magnification, open the drop-down menu under 'Zoom'.

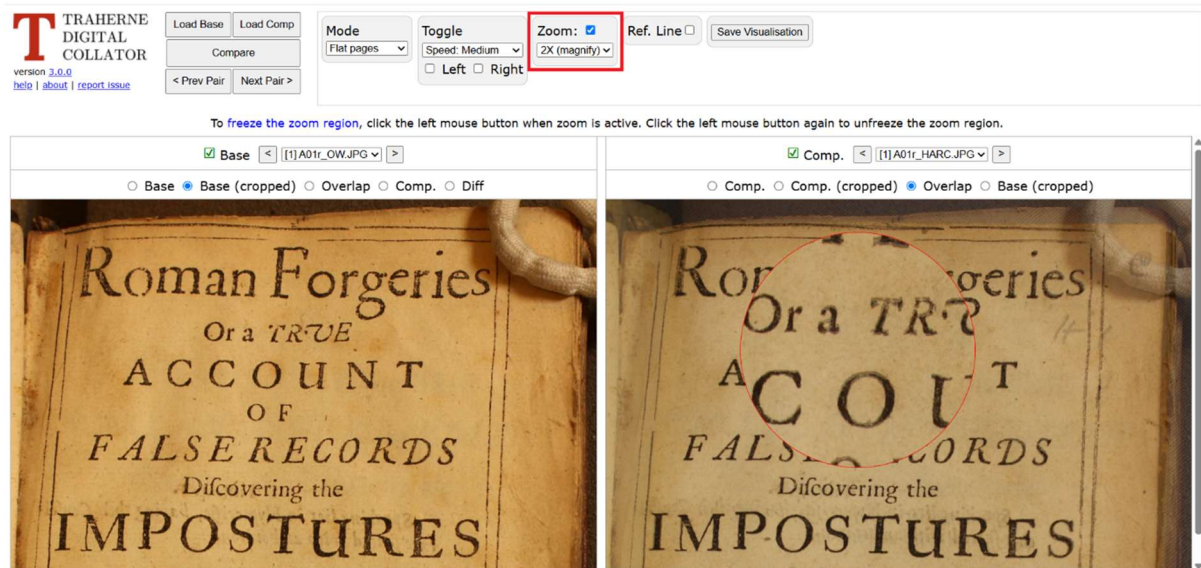


Figure 8 Controls for the zoom function

- When comparing images, a horizontal reference line can be added across both images to help compare the relative positions of textual and other details. To add a horizontal line across both images, click the box labelled 'Ref. Line'. To move the line, left click and hold the 'handle' between the two panels to drag the line up and down, or left click in the white space between the two panels at the point where you want the line to appear. To switch it off, uncheck the box.

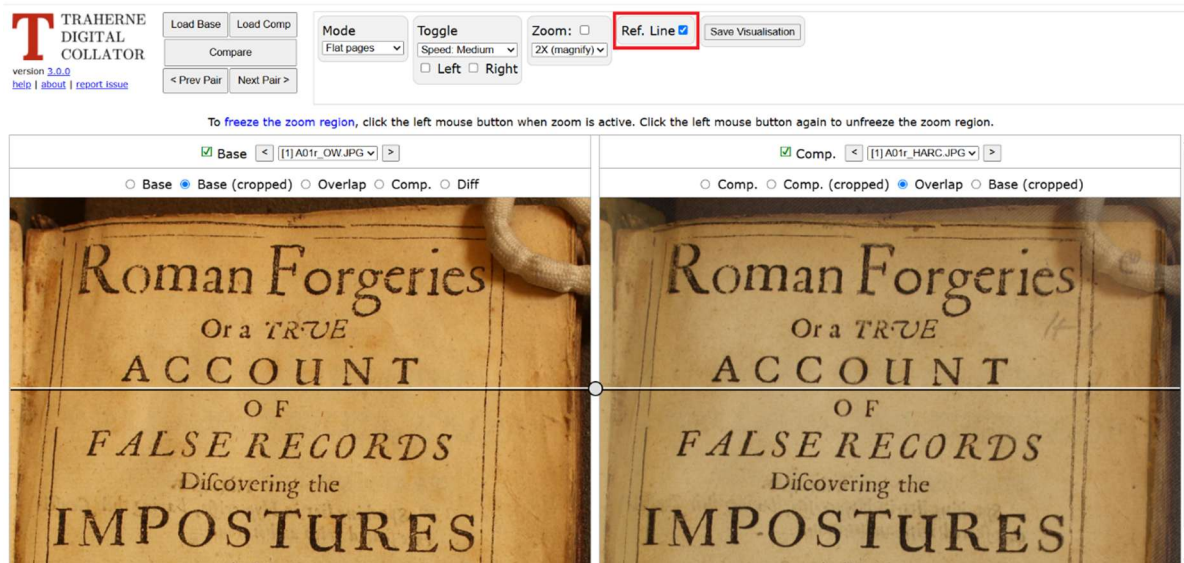


Figure 9 The control for the reference line.

Saving results

- Click the button labelled 'Save Visualisation' to save copies of the images currently being displayed by the software. It will create a single image showing the image on the left next to the image on the right. Both will be labelled with their file names. Look for the saved image in your Downloads folder.

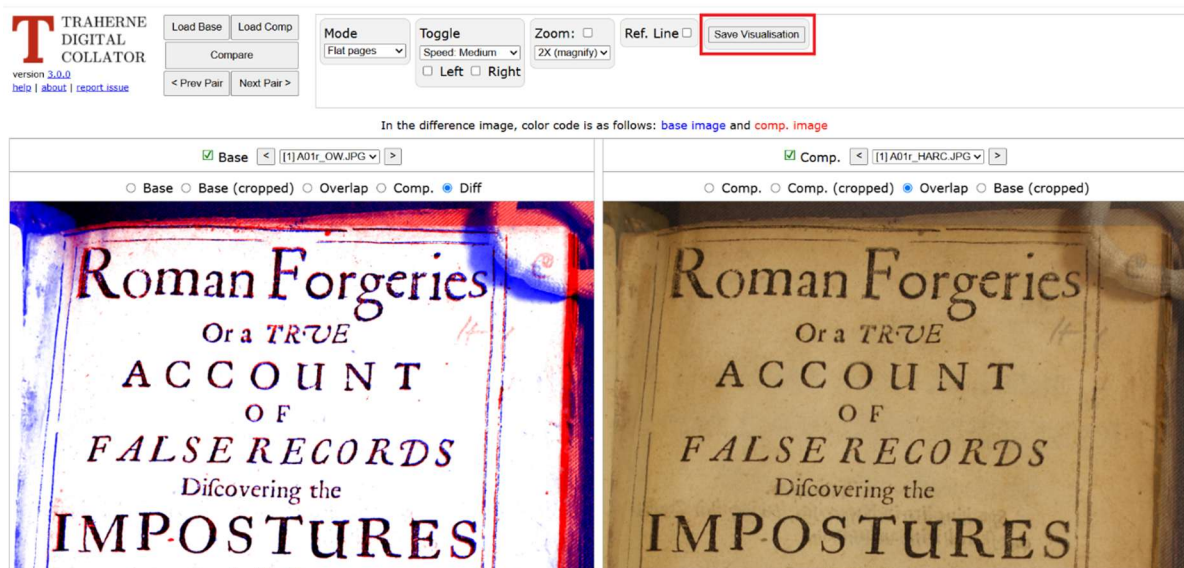


Figure 10 The 'Save Visualisation' button.

Comparing new images

- To move on to the next page, press 'Next Pair >'. To move back a page, press '< Prev Pair'.
- Use the forward and backward arrows above each panel to change the image in each panel separately. You can also use the drop down menus above each panel to choose specific images.

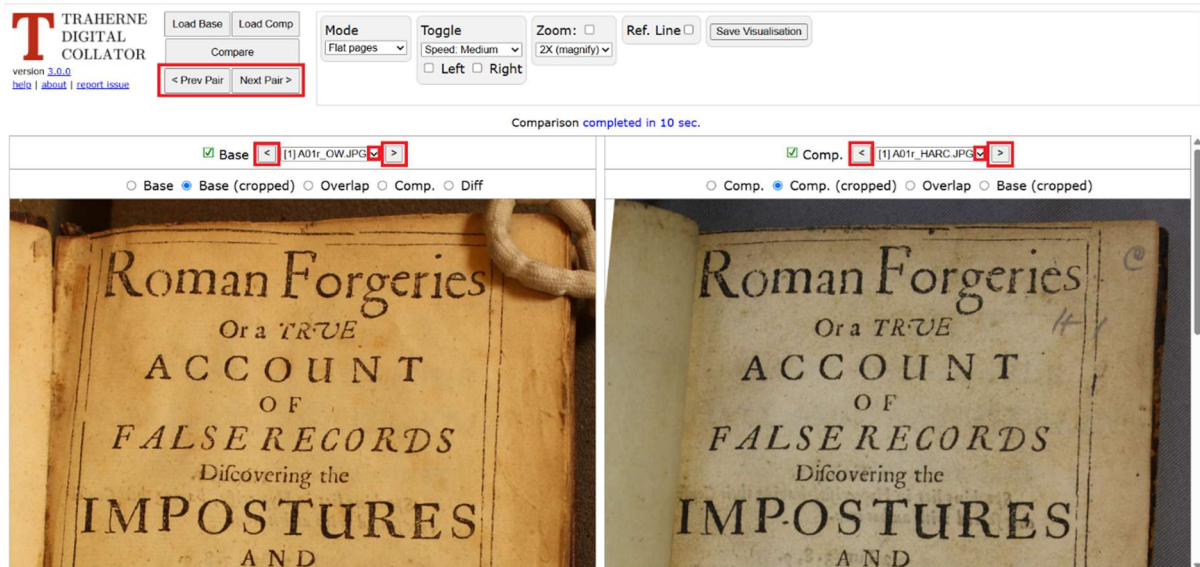


Figure 11 Navigation controls.

- To select completely new images, click 'Load Base' and/or 'Load Comp'.
- When new images are loaded, proceed as before.

Collating multiple copies

If you are collating more than two copies, it is normally most efficient to collate them all at the same time on a page-by-page basis. That is to say, it is best to collate sig. A1r of all copies at the same time, then move on to A1v, and so on. This is more efficient than working through a single comparison copy from start to finish and then beginning again with the next comparison copy. As well as being quicker, this workflow produces more accurate results because, when a variant is found in one copy, it is easy to check whether it is also found in the other copies (this is particularly useful for checking whether you missed it in a copy you already collated). This workflow also makes it easy to compare comparison copies against each other, which can be helpful when checking for changes to alignment which might indicate that type has been reset.

To implement this workflow:

- Make temporary copies of all the photographs you want to use for collation in a single folder (these copies are only needed whilst you collate, and can be deleted once you finish). Include the base copy and all the comparison copies.
- Rename the base copy photographs by adding `_BASE_` at the start of the filename (this means the base copy will appear first when images are listed in alphabetical order).
- If you have the technical expertise to automate the copying and renaming steps described above using a simple script, this will speed up the process and reduce the likelihood of error. It can, though, be done manually, in which case you will probably want to start by copying and renaming the photographs of the base copy before copying the other photographs across.
- Once the photographs have been copied and renamed, load the photographs as before. However, in this case, load all the copied photographs you have just made after clicking both 'Load Base' and after clicking 'Load Comp'. This will make it easy to load any pair of pages you want to compare from any of the copies.
- Use the drop-down arrows next to 'Base' and 'Comp' to load the first page of the base copy in the left-hand panel and the first page of the first comparison copy in the right-hand panel.

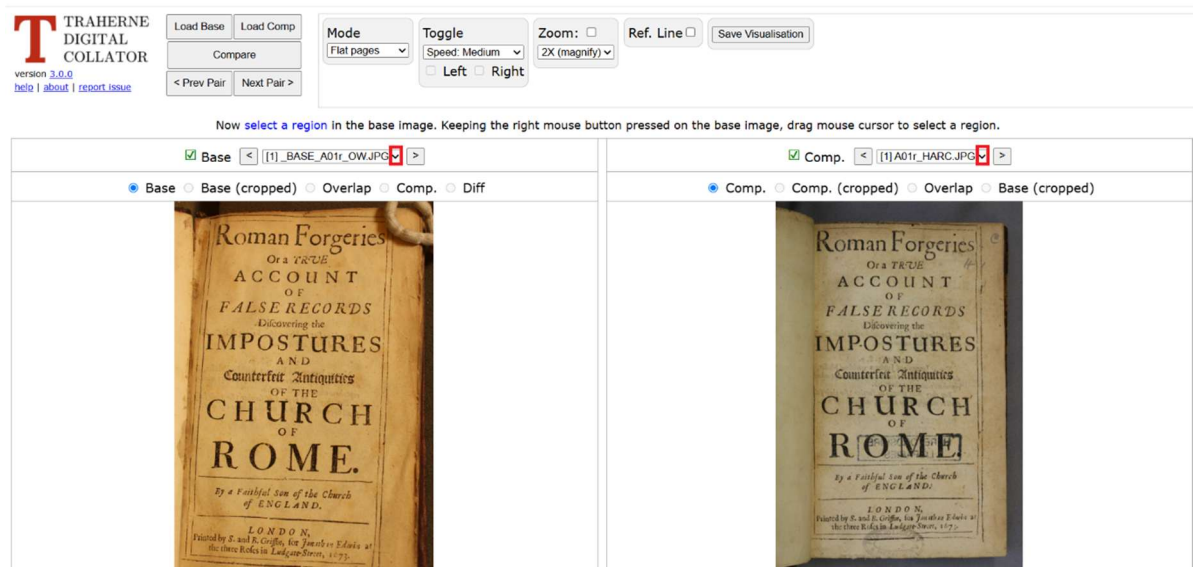


Figure 12 The drop-down arrows should be used to load the first page of the base copy in the left-hand panel and the first page of the comparison copy in the right-hand panel

- When you have finished collating your first comparison copy, use the forward arrow above the right-hand panel to load the next comparison copy. Continue until you have collated the first page of all copies. Then, when you are ready to move on to the next page, use the drop-down arrows to load the next page of the base copy in the left-hand panel and the next page of the first comparison copy in the right-hand panel.

Recording results

An efficient way to record results is in a spreadsheet with a column for each copy and a row for each identified variant. The reading in each copy should be explicitly recorded. Conditional formatting can be used to highlight readings which differ from the base copy. Furthermore, the file can be used to generate other outputs to meet your needs such as, for example, analysis of the number of stop-press corrections appearing on each side of each sheet, or a text file listing variants formatted according to the style of textual notes.

D	E	H	I	J	K	L	M	N	O	P	Q	S
Sig	Line	OW	BRS	HARC	NLS	O	OB	OBR	OQ1	OQ2	Comments	
A3v	15-16	*B *-shops	*B *-shops	*B *-shops	*B *-shops	*B *-shops	*B *-shops	*B *-shops	*B *-shops	*B *-shops	This is the first of a relative	
A4r	16	Laitie,	Laitie,	Laitie	Laitie	Laitie,	Laitie,	Laitie,	Laitie,	Laitie,	Comma added in OW.	
A4r	20	some,	some,	some	some	some,	some,	some,	some,	some,	Comma added in OW.	
A4r	21	others ;	others ;	others ,	others ,	others ;	others ;	others ;	others ;	others ;		
A4r	23	Congregation	Congregation	Congregation	Congregation	Congregation	Congregation	Congregation	Congregation	Congregation	Comma added in OW.	
A5v	04	*Councils,*	*Councils,*	*Councils,*	*Councils,*	*Councils,*	*Councils,*	*Councils,*	*Councils,*	*Councils,*	Comma added in OW.	
A5v	10	*Defence,*	*Defence,*	*Defence,*	*Defence,*	*Defence,*	*Defence,*	*Defence,*	*Defence,*	*Defence,*	Comma added in OW.	
A5v	12	*security.*	*security.*	*security,*	*security,*	*security.*	*security.*	*security.*	*security.*	*security.*	Comma corrected to full str	
A5v	16a	evry	evry	every	every	evry	evry	evry	evry	evry	The spelling was changed to	
A5v	16b	*P*rovince,	*P*rovince,	*P*rovince	*P*rovince	*P*rovince,	*P*rovince,	*P*rovince,	*P*rovince,	*P*rovince,	Comma added in OW.	
A5v	16c	celebrated,	celebrated,	celebrated	celebrated	celebrated,	celebrated,	celebrated,	celebrated,	celebrated,	Comma added in OW and f	
A6r	04	*forcible*	*forcible*	*forceable*	*forceable*	*forcible*	*forcible*	*forcible*	*forcible*	*forcible*	Spelling corrected in OW.	
A6r	14-15	*No Eva-/sioi	*No Eva-/sioi	*No Eva-/sioi	*No Eva-/sioi	*No Eva-/sioi	*No Eva-/sioi	*No Eva-/sioi	*No Eva-/sioi	*No Eva-/sioi		

Figure 13 Collation results recorded in a spreadsheet

Trouble shooting

The collator is loading pages in the wrong order.

Check that the images files are in the right order when arranged alphabetically. If they are not, rename them.

The results of comparison are distorted when the collator is set to 'curved pages'.

Repeat the comparison process until you have an undistorted result. Compare the whole image, without selecting a region. Switch to 'flat pages'.

There are local distortions in the comparison results where there are booksnakes or fingers in the margins.

Select only the textblock for comparison.

The toggle function is not working.

Check that 'Base (cropped)' in the left panel and 'Comp. (cropped)' in the right panel. Toggle will not work if either 'Base' or 'Comp.' are selected.

I can't find visualisations I have saved

Check your Downloads folder.

Feedback

We welcome your feedback on the Traherne Digital Collator software and user instructions, but regret that we are not able to provide technical support. Please send any comments to the general editor of the Oxford Traherne: julia.smith@ell.ox.ac.uk. Technical questions, including bug reports, should be posted on the software's Gitlab repository, at <https://gitlab.com/vgg/imcomp>.

Citation

If you use the Traherne Digital Collator in published work, please consider citing it as follows: A. Dutta, J. S. Chung, P. Sridhar, and A. Zissermann, Traherne Digital Collator, version 3.0.0 (2026), <http://www.robots.ox.ac.uk/~vgg/software/traherne>.