



Managing Qualitative Data In The Field: Automation, Images and Metadata



Sophie Wallace¹ (sophie.wallace@students.mq.edu.au)¹
Macquarie University, Sydney, NSW

Aim: This research project aims to demonstrate a streamlined process of managing images on a Mac laptop. This includes exporting the images from the default Photo library, embedding metadata into the image, organising the images in a research photo management system and storing the images securely.

Why: This it to make the research process more manageable and efficient. Messy and unorganised data is very common in the field. Using this workflow enables the researcher to sit back whilst the photos are organised and metadata is added to the images.

Useful for: This is useful for researchers and students in the field who take photographs as part of their data collection.

Significance: This provides better time management, detail, efficiency and reduces the stress of managing large data sets. Additionally, securely storing the images prevents the loss of data and information.

Additional information: Released under MIT License. Further details can be found on github at: <https://github.com/MQ-FOAR705/SophieWallacepicopresentation> and <https://github.com/MQ-FOAR705/SophieWallacePOCcontents>

Managing Qualitative Data In The Field: Automation, Images and Metadata



Sophie Wallace¹ (sophie.wallace@students.mq.edu.au)¹

Macquarie University, Sydney, NSW

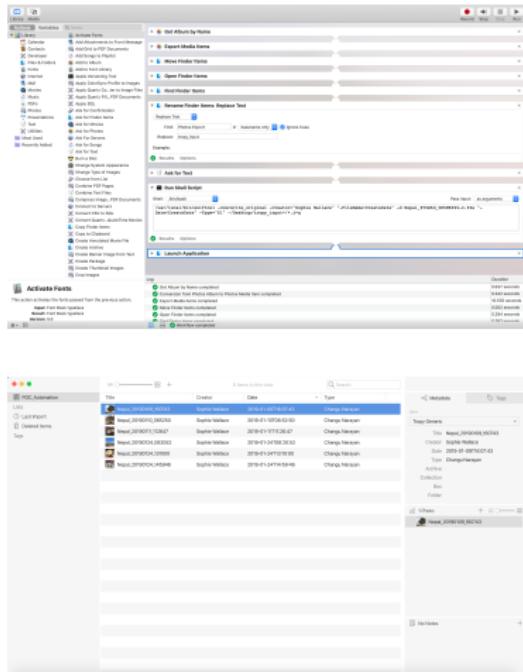


Image 1: Automator workflow that exports images from the Mac Photos application and embeds metadata. An ExifTool script adds the name of the researcher, the original date and time and prompts the user to write the location where the photos were taken.

Image 2: How these images and their metadata are recorded in Tropy. Prior to this, the images were named generically and the other categories were empty.

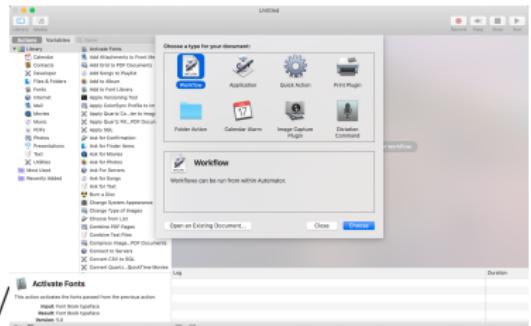
Managing Qualitative Data In The Field: Automation, Images and Metadata



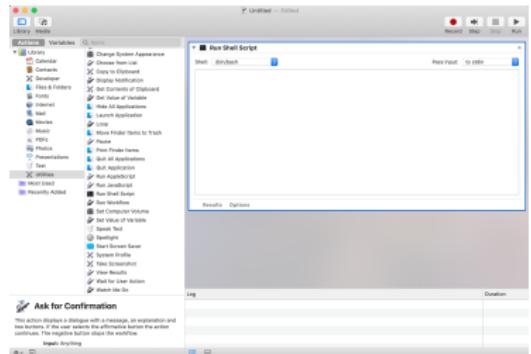
Sophie Wallace¹ (sophie.wallace@students.mq.edu.au)¹

Macquarie University, Sydney, NSW

Using Automator: Automator is an exclusive Mac application that programs a workflow by automating repetitive tasks using a drag and drop interface. [https : //macosxautomation.com/automator/](https://macosxautomation.com/automator/)



Workflows are created by combining a set of actions to produce a result. There are numerous variables and pathways to achieve this. A shell script can also be included in the workflow.





Managing Qualitative Data In The Field: Automation, Images and Metadata



Sophie Wallace¹ (sophie.wallace@students.mq.edu.au)¹
Macquarie University, Sydney, NSW

```
sophiewallace — -zsh — 95x28
Last login: Sat Nov  9 14:42:39 on ttys000
[sophiewallace@192-168-1-108 ~ % exiftool /Users/sophiewallace/Pictures/Photos\ Library.photoslibrary/resources/derivatives/D/D804C5AB-83BC-45E9-954F-E8862E8F2E5D_1_105_c.jpeg
ExifTool Version Number      : 11.71
File Name                   : D804C5AB-83BC-45E9-954F-E8862E8F2E5D_1_105_c.jpeg
Directory                  : /Users/sophiewallace/Pictures/Photos Library.photoslibrary/resources/derivatives/D
File Size                   : 258 kB
File Modification Date/Time : 2019:01:27 15:31:23+11:00
File Access Date/Time       : 2019:10:10 15:14:54+11:00
File Inode Change Date/Time: 2019:10:10 15:10:26+11:00
File Permissions            : rw-r--r--
File Type                   : JPEG
File Type Extension         : jpg
MIME Type                   : image/jpeg
JFIF Version                : 1.02
Resolution Unit              : inches
X Resolution                : 72
Y Resolution                : 72
Image Width                 : 1024
Image Height                : 768
Encoding Process             : Baseline DCT, Huffman coding
Bits Per Sample              : 8
Color Components             : 3
YCbCr Sub Sampling          : YCbCr4:2:0 (2 2)
Image Size                   : 1024x768
Megapixels                  : 0.786
sophiewallace@192-168-1-108 ~ %
```

Using ExifTool: ExifTool is an open-source software program for reading, writing, and manipulating image, audio, video, and PDF metadata. The image above shows ExifTool displaying metadata already embedded in an image.



Managing Qualitative Data In The Field: Automation, Images and Metadata

Sophie Wallace¹ (sophie.wallace@students.mq.edu.au)¹

Macquarie University, Sydney, NSW



The screenshot shows a Mac OS X Automator workflow window. At the top, there's a 'Replace Text' action with 'Find:' set to 'Photos Export' and 'Replace:' set to 'tropy_input'. Below it is an 'Ask for Text' action with the question 'What is the geo-location of these photos?' and a checked 'Require an answer' option. The next step is a 'Run Shell Script' action, which contains the following shell command:

```
/usr/local/bin/exiftool -overwrite_original -Creator="Sophie Wallace" "-FileName<CreateDate" -d Nepal %Y%m%d_%H%M%S%-c.%#e "-Date<CreateDate" -Type="$1" ~/Desktop/tropy_input/*.j*g
```

At the bottom of the workflow is a 'Launch Application' action.

Combining Automator and ExifTool: With the automator action "run shell script", a basic ExifTool script was able to be included directly in this workflow.



Managing Qualitative Data In The Field: Automation, Images and Metadata



Sophie Wallace¹ (sophie.wallace@students.mq.edu.au)¹
Macquarie University, Sydney, NSW

The screenshot shows a Mac OS X workflow interface with three stacked panels:

- Replace Text**: A panel for replacing text in file names. It has fields for "Find" (Photos Export), "Replace" (tropy_input), and checkboxes for "basename only" and "Ignore Case".
- Ask for Text**: A panel for prompting the user for geo-location information. It includes a text input field asking "What is the geo-location of these photos?", a "Default Answer" field, and a checkbox for "Require an answer".
- Run Shell Script**: A panel for executing a shell script. The "Shell" field is set to "/bin/bash". The script content is:

```
/usr/local/bin/exiftool -overwrite_original -Creator="Sophie Wallace" "-FileName<CreateDate" -d Nepal_%Y%m%d_%H%M%S%.%#e "-Date<CreateDate" -Type="$1" ~/Desktop/tropy_input/*.jpg
```

Below the third panel is a fourth panel labeled "Launch Application".

This shell script adds metadata to Tropy categories such as creator, name, date and type. Due to the arbitrary nature of 'type', a prompt was included to ask for geo-location.



Managing Qualitative Data In The Field: Automation, Images and Metadata



Sophie Wallace¹ (sophie.wallace@students.mq.edu.au)¹

Macquarie University, Sydney, NSW

The screenshot shows the Tropy software interface. On the left, there's a sidebar with 'Lists' (PDC_Automation), 'Last Import', 'Deleted Items', and 'Tags'. The main area displays a list of 6 items with columns for 'Title', 'Creator', 'Date', and 'Type'. Below this is a detailed view of an item titled '9C5FA589-FE30-498B-B306-B...', showing its 'Metadata' tab which includes fields for Title, Creator, Date, Type, Archive, Collection, and Box. At the bottom right of the main area, there's a preview section showing '1 Photo' with a thumbnail of the same image and the title '9C5FA589-FE30-498B-B306-B...'. At the very bottom, there's a note 'No Notes'.

Using Tropy: Tropy is an open-source software program for research photo management. This tool imports images and organises them with metadata and tags. Metadata needs to be added manually. Above displays how generic images are displayed after importing.



Managing Qualitative Data In The Field: Automation, Images and Metadata



Sophie Wallace¹ (sophie.wallace@students.mq.edu.au)¹

Macquarie University, Sydney, NSW

The screenshot shows the Tropy application interface. On the left, there's a sidebar with 'POC_Automation' selected, showing 'Lists' (Last Import, Deleted Items) and 'Tags'. The main area displays a table with 6 items in view, listing 'Title', 'Creator', 'Date', and 'Type'. One item is highlighted: 'Nepal_20190109_160743' by Sophie Wallace on 2019-01-09T16:07:43, categorized as 'Changu Narayan'. To the right, a 'Metadata' panel shows details for this item: Title, Creator, Date, Type, and a 'Collection' section with 'Box' and 'Folder' options. Below the table, a 'Photos' section shows 1 photo of the item. At the bottom, there are 'No Notes' and a '+' button.

Title	Creator	Date	Type
Nepal_20190109_160743	Sophie Wallace	2019-01-09T16:07:43	Changu Narayan
Nepal_20190110_085250	Sophie Wallace	2019-01-10T08:52:50	Changu Narayan
Nepal_20190111_112647	Sophie Wallace	2019-01-11T11:26:47	Changu Narayan
Nepal_20190124_082052	Sophie Wallace	2019-01-24T08:20:52	Changu Narayan
Nepal_20190124_131000	Sophie Wallace	2019-01-24T13:10:00	Changu Narayan
Nepal_20190124_145946	Sophie Wallace	2019-01-24T14:59:46	Changu Narayan

Combining tools: With Automator, ExifTool and Tropy, the images are uploaded in a more streamlined process and metadata is added seamlessly along the way. The image above displays the final result.



Managing Qualitative Data In The Field: Automation, Images and Metadata



Sophie Wallace¹ (sophie.wallace@students.mq.edu.au)¹
Macquarie University, Sydney, NSW

More information on this presentation and related content can be found here:

- ▶ **Pico Presentation:** [*https : //github.com/MQ – FOAR705/SophieWallacePicoPresentation*](https://github.com/MQ-FOAR705/SophieWallacePicoPresentation)
- ▶ **Proof of Concept, Images and Project Management:**
[*https : //github.com/MQ – FOAR705/SophieWallacePOCcontents*](https://github.com/MQ – FOAR705/SophieWallacePOCcontents)