

# GIMP for Artwork in Scientific Publications

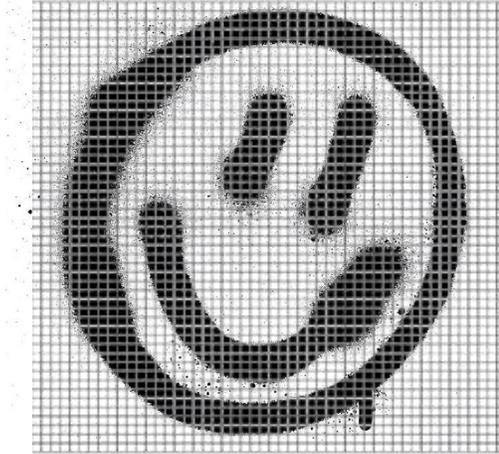
Raphael Vanderstichel, DVM PhD

June 7, 2021



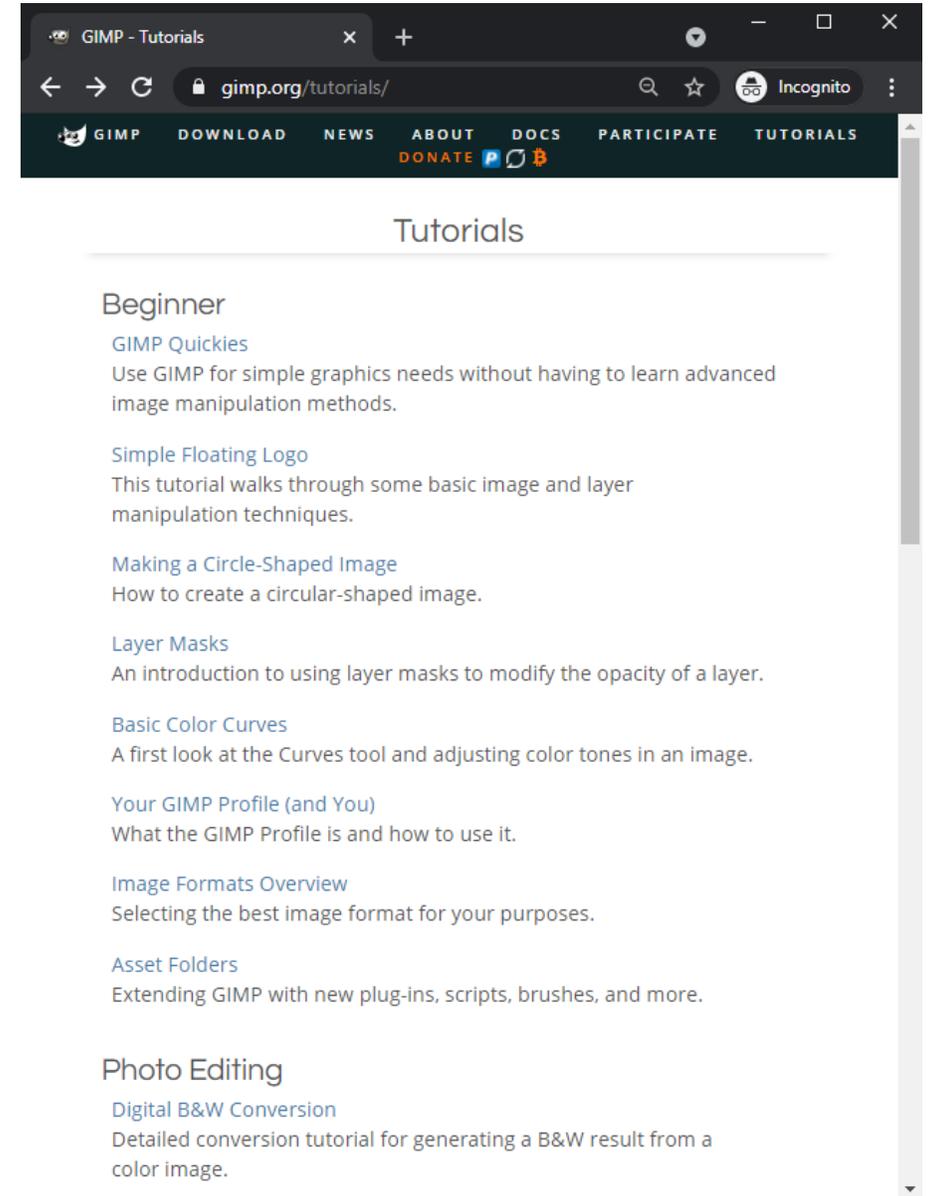
# GNU Image Manipulation Program (GIMP)

- Raster graphics editor
  - Adobe Photoshop
  - VS vector graphics
    - Inkscape
- Open-source
  - Free (free speech) and Free (free beer)
- GNU/Linux
  - Available for macOS and Microsoft Windows
  - Many 3<sup>rd</sup> party plugins and filters
- Learning Resources
  - Tutorials, guides, YouTube videos, etc...



# GIMP: Canvas and Layers

- Image and Layers
  - Image = canvas
    - Set dimensions, resolution, and color mode
  - Work on the ACTIVE layer
    - Alpha-channel
      - Fancy word for 'transparent'
    - Stacked visually from Bottom to Top
    - Add text, images, individual graphs
- Save project
  - XCF file
    - Includes all layers... not just a link to files in hard drive
  - EXPORT to other formats
    - Lossless
      - TIFF and PNG
    - Lossy
      - JPG

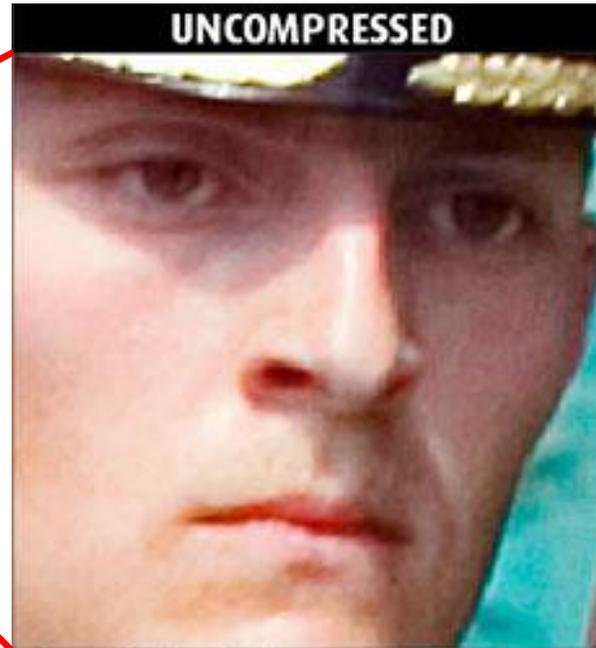


# GIMP: Image Quality

<http://shutha.org/node/829>



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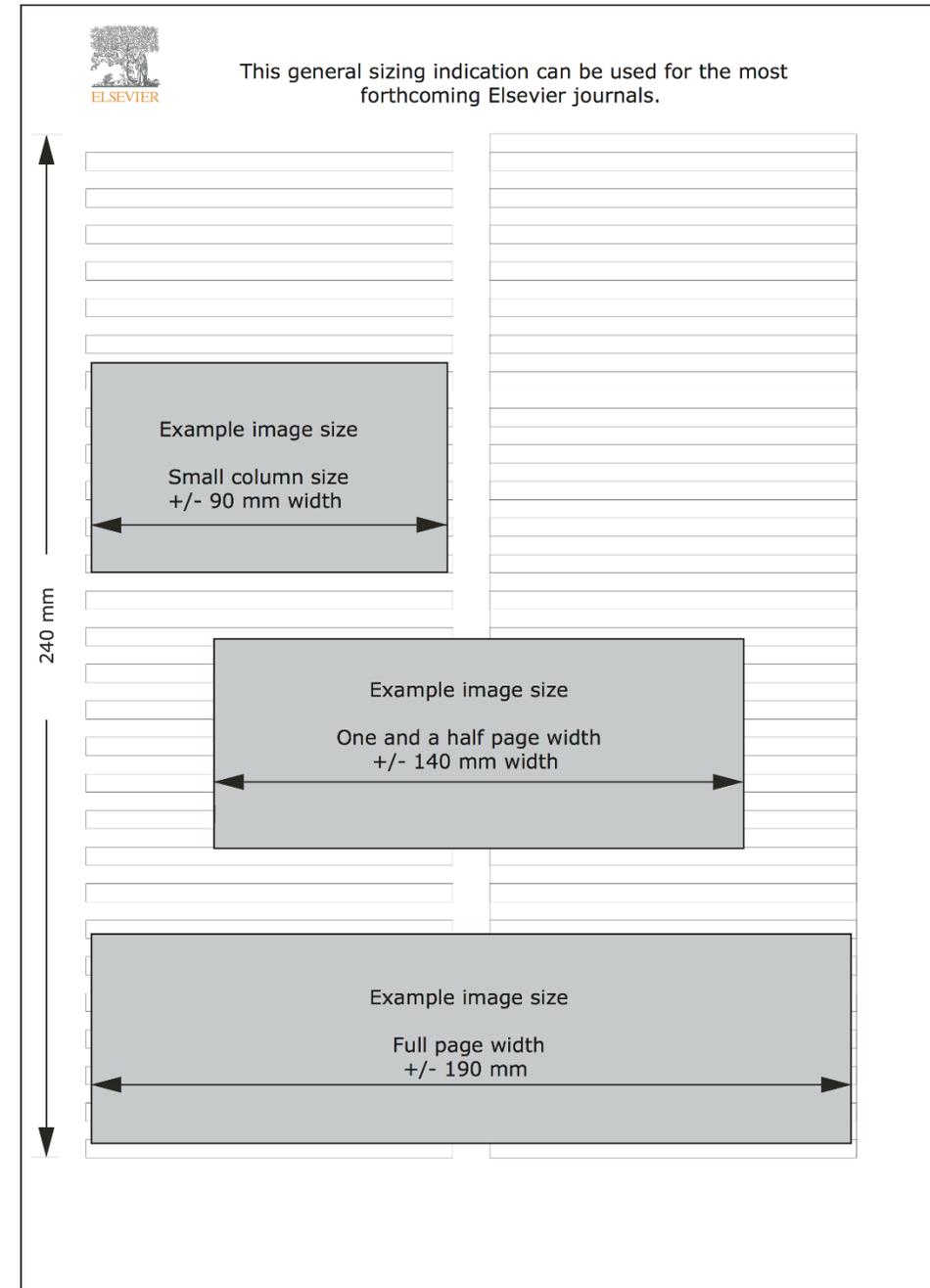


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# Elsevier

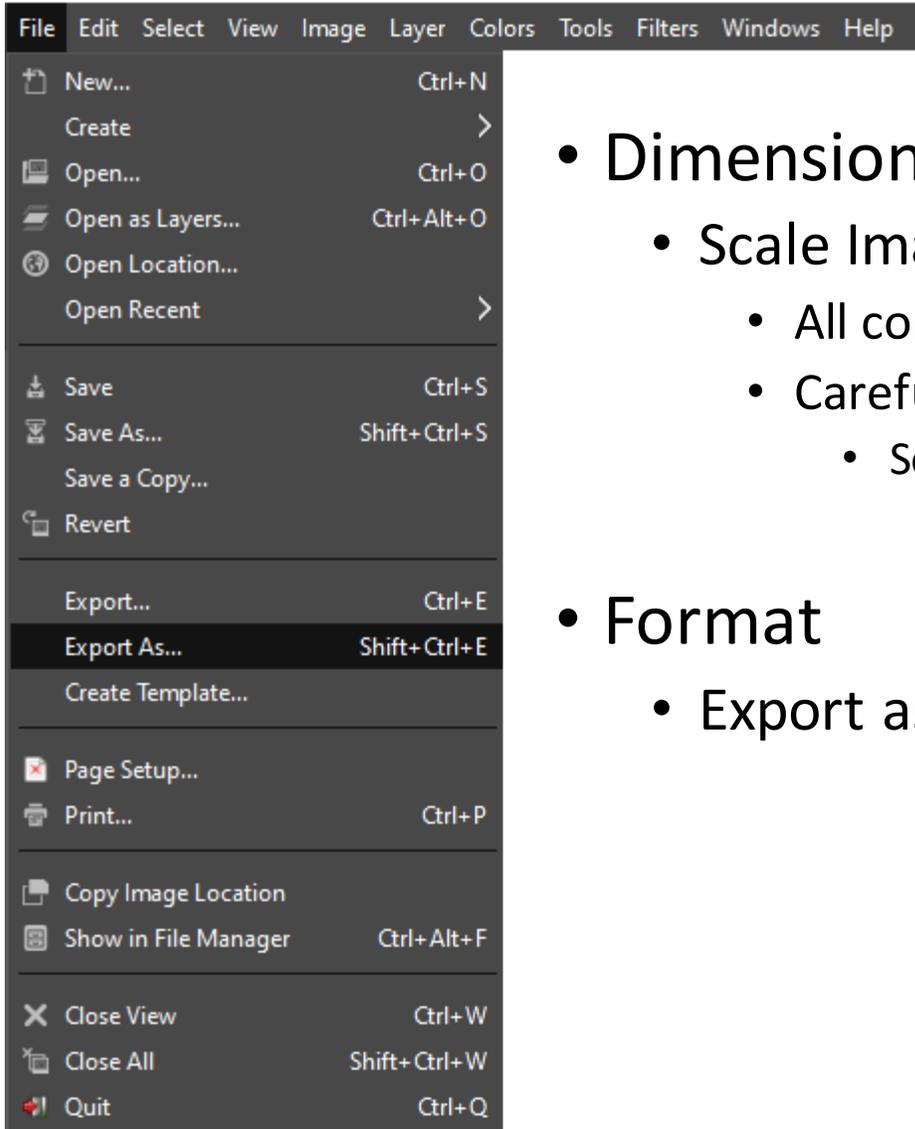
- Dimensions
- Resolution
  - Line art (purely black and white lines)
    - Minimum 1000 dpi (max 1200)
    - TIFF format
  - Grayscale and RGB images (halftone)
    - Minimum 300 dpi
    - TIFF (or JPEG with maximum quality)
  - Combination art (line and halftone)
    - 500 dpi
    - TIFF (or JPEG with maximum quality)
- Format (PowerPoint and CorelDraw are NOT acceptable)
  - Tagged image file format (.tiff)
  - JPEG (.jpg)
  - Portable document format (.pdf)
  - Adobe Photoshop document (.psd)
- All text and symbols must be easily legible at the dimensions to be published
  - Embed fonts
    - Arial (or Helvetica), Courier, Symbol, Times (or Times New Roman)
    - 7 pt for normal text (no smaller than 6 for subscript)
      - Can go as high as 10 pt



# Journal of Wildlife Diseases (Allen Press)

- Dimensions
  - Single-column (7 cm) wide
  - Full-page (14 cm) width
- Resolution
  - Minimum 300 dpi
- Format (PowerPoint and CorelDraw are NOT acceptable)
  - Tagged image file format (.tiff)
  - JPEG (.jpg)
  - Portable document format (.pdf)
  - Adobe Photoshop document (.psd)
- All text and symbols must be easily legible at the dimensions to be published
  - Embed or Outline fonts
    - Helvetica or Arial
  - Mount a scale bar directly on all photomicrographs
  - Include north directional arrow if North is not toward the top of the figure

# GIMP - operations



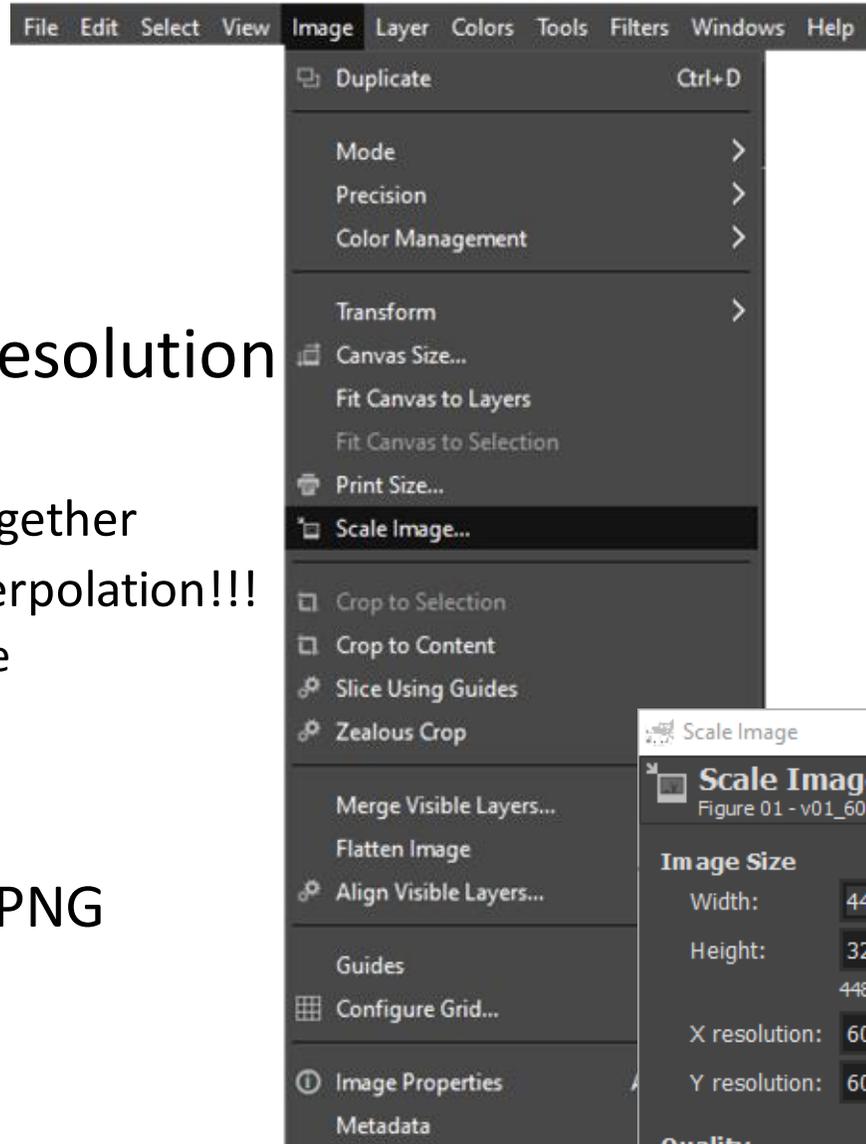
- Dimensions and Resolution

- Scale Image

- All controlled together
    - Careful with Interpolation!!!
      - See next slide

- Format

- Export as TIFF or PNG

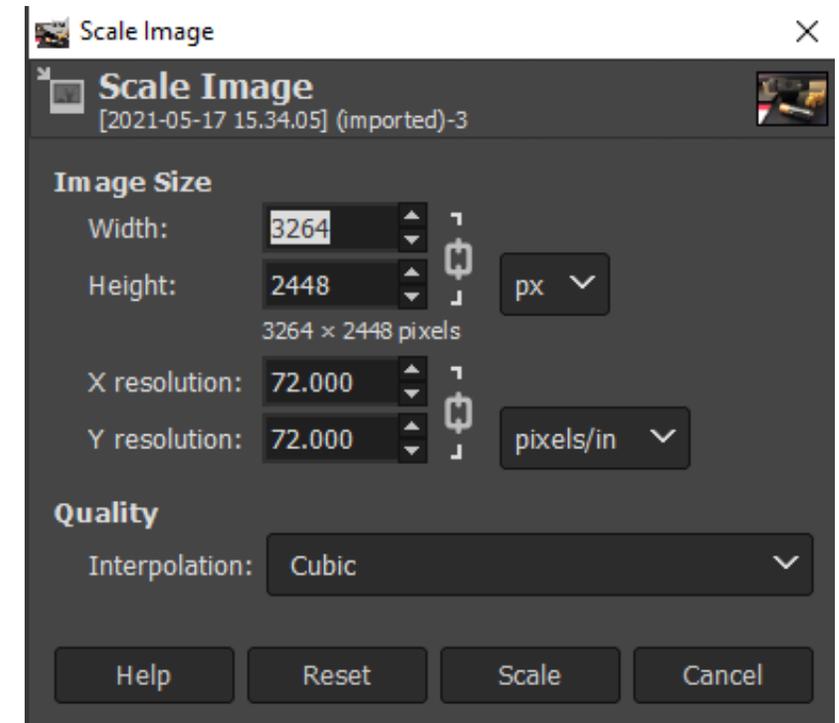


# You can always shrink/compress later!!!

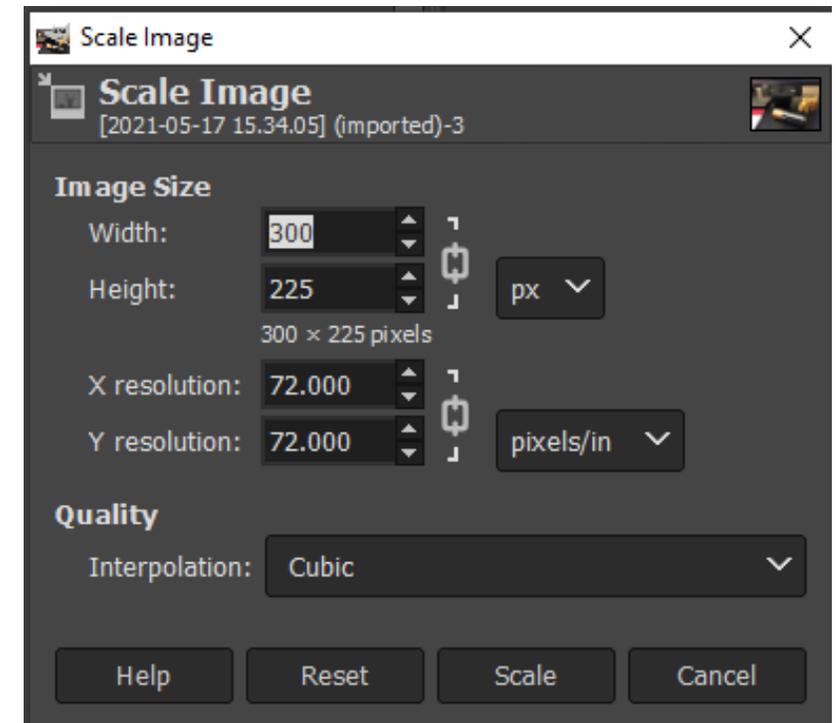
- Once a raw pixel is gone... it's gone!
- Stay lossless for as long as possible
  - Keep original images
  - Save as XCF project files
    - Export 'forward' as NEW versions
- Re-scale DOWN only
  - This will remove pixels
  - DO NOT re-scale up
    - Pixels just get filled-in
      - Info will look correct (artificially)
      - Image stays 'pixelated'



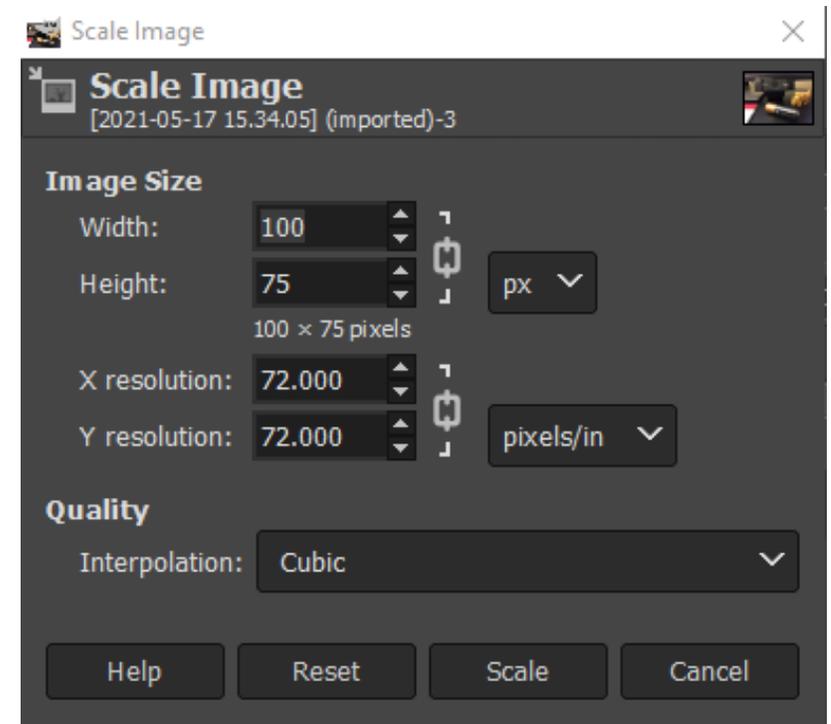
# Example: Shrink and then re-scale up



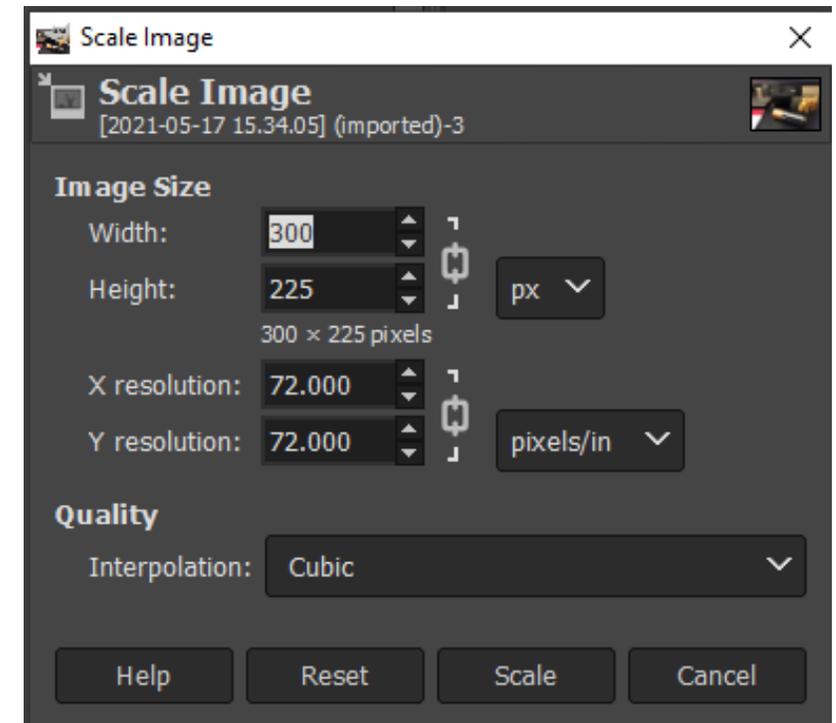
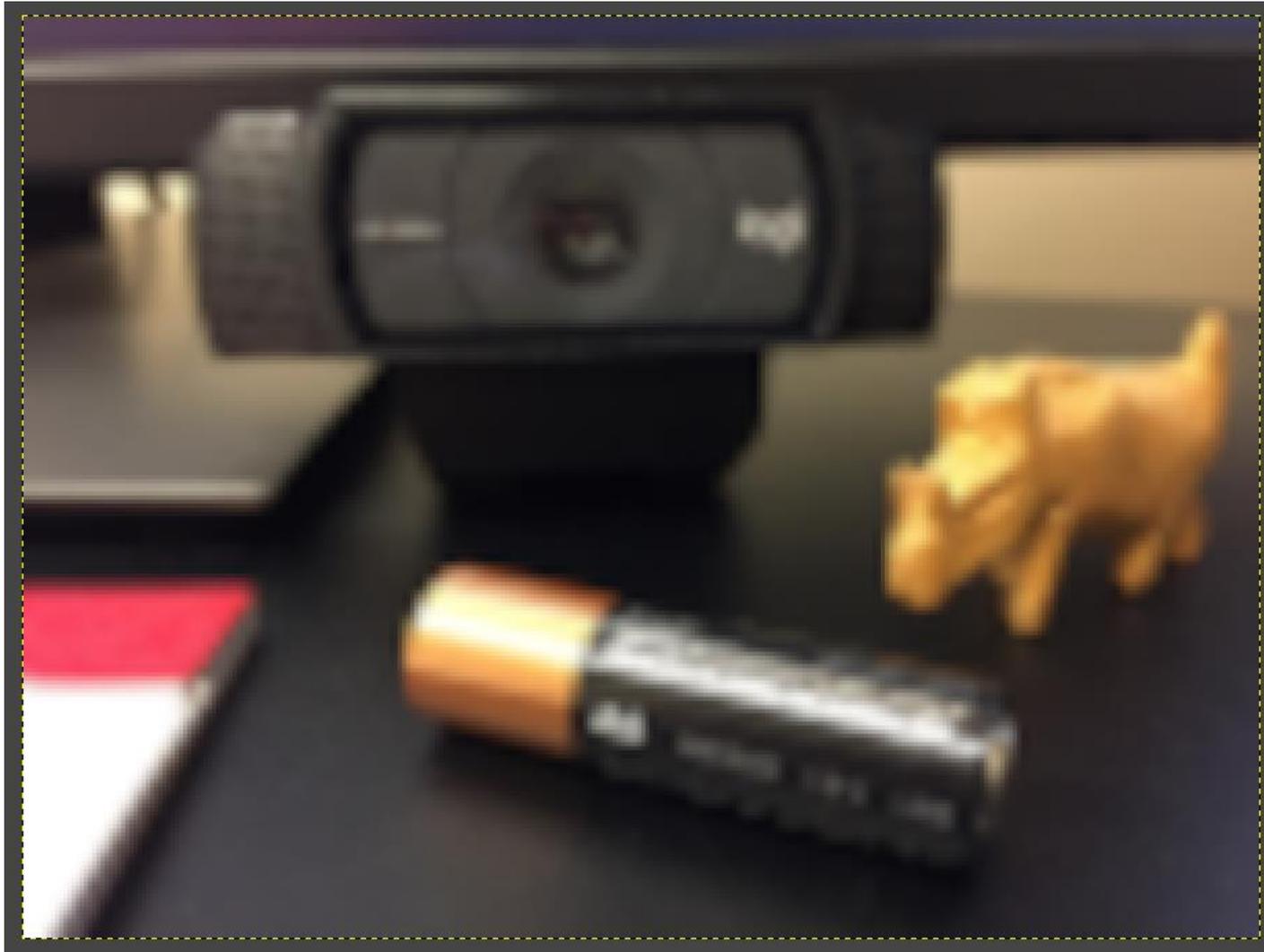
# Example: Shrink and then re-scale up



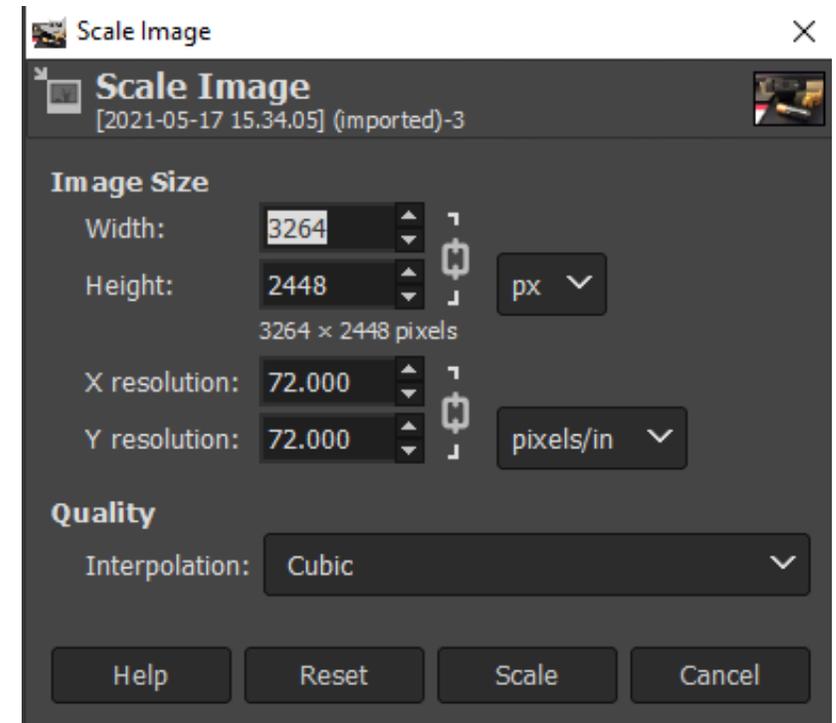
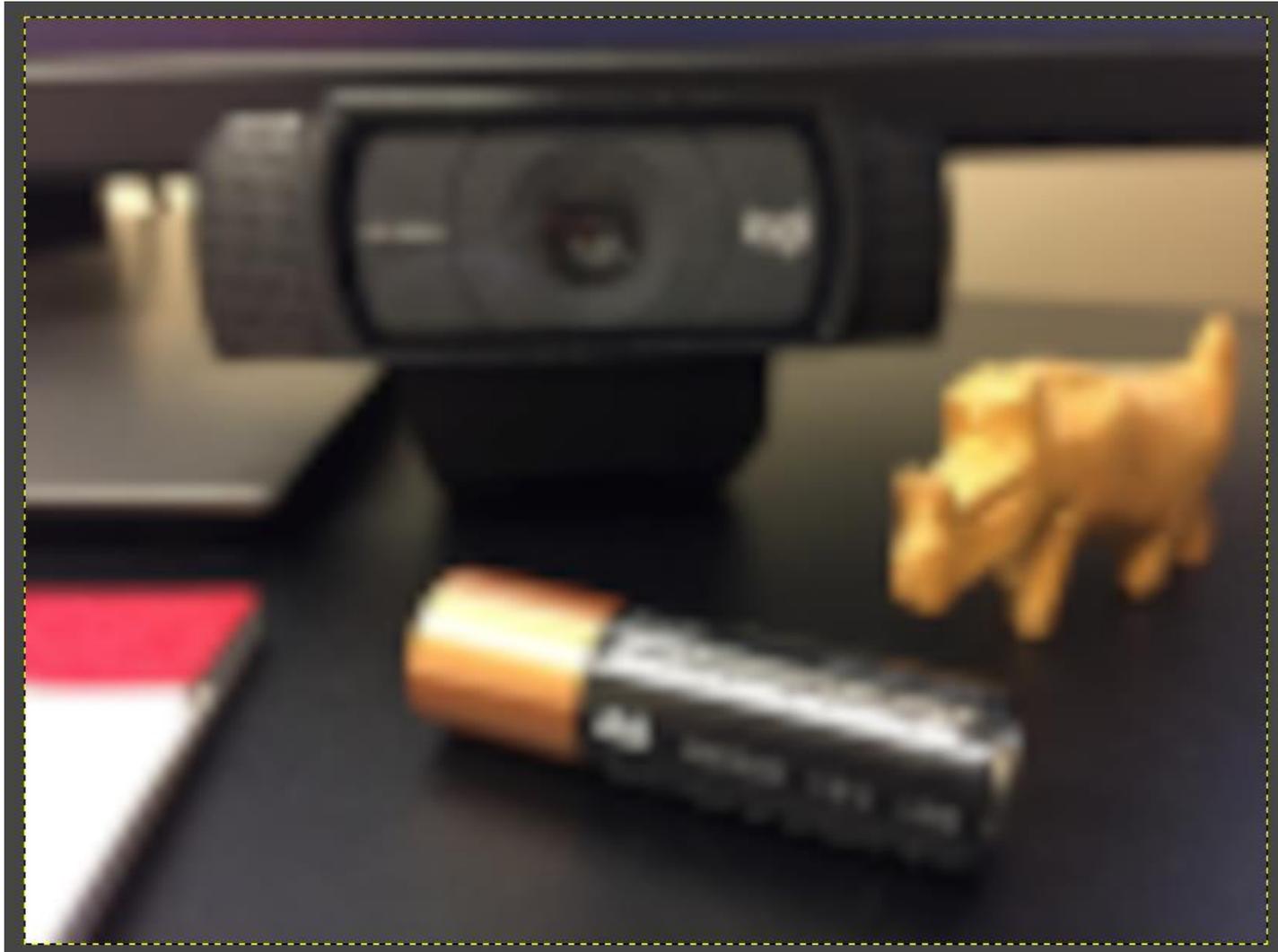
# Example: Shrink and then re-scale up



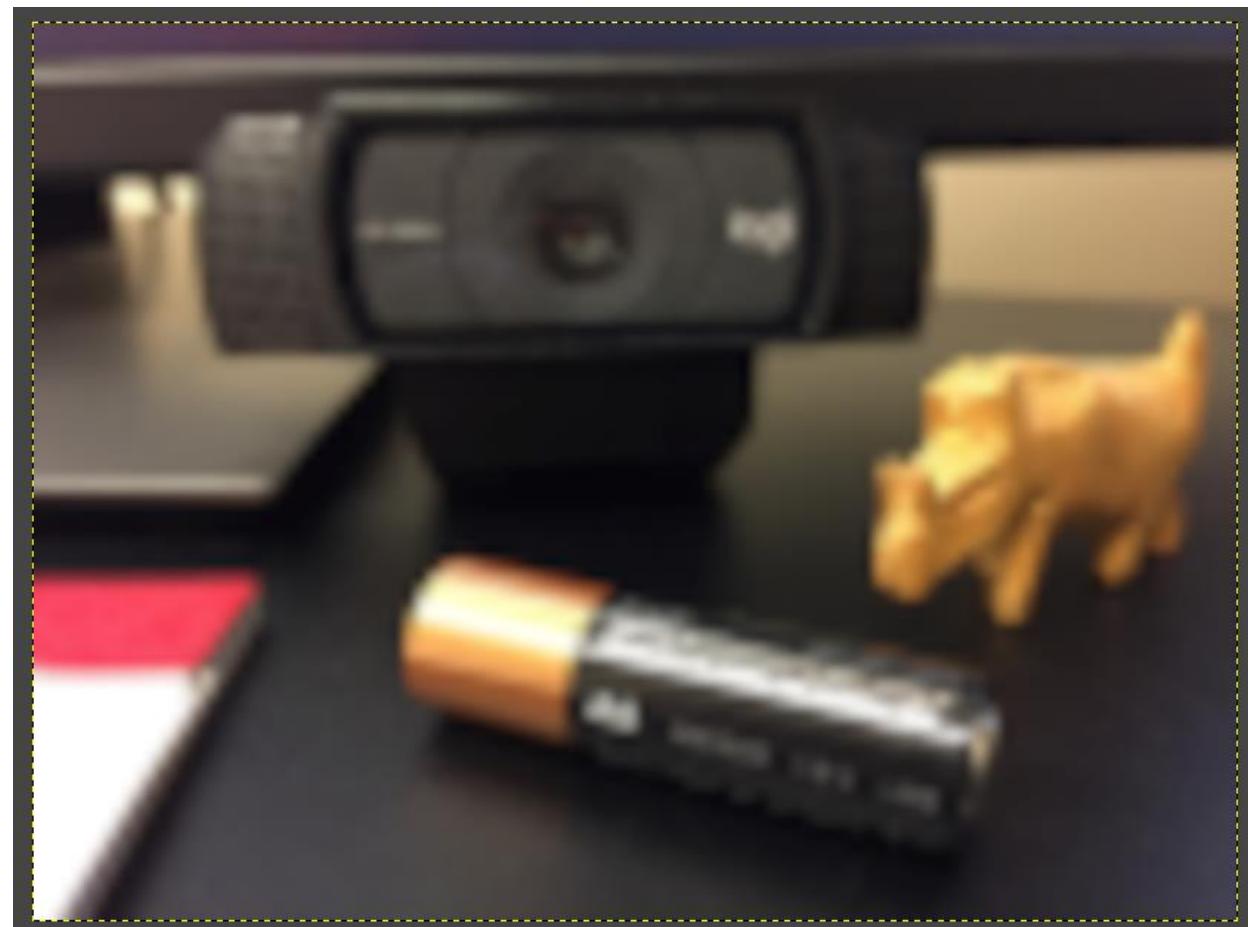
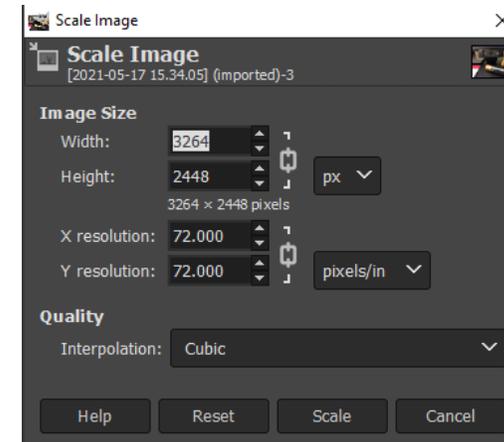
# Example: Shrink and then re-scale up



# Example: Shrink and then re-scale up



# Example: Shrink and then re-scale up



# GIMP Exercises

- Copy/Paste from Excel (graph)
  - Native resolution = 96 dpi
  - Make it HUGE in Excel
    - Font size ~150pt
    - Line width ~20pt
- Export from Stata
  - `graph export "*.png", width(4488)`
- Make a panel of 2 graphs (stacked)
  - Import 1<sup>st</sup> graph
  - Scale Image
  - Align layers
  - Add text